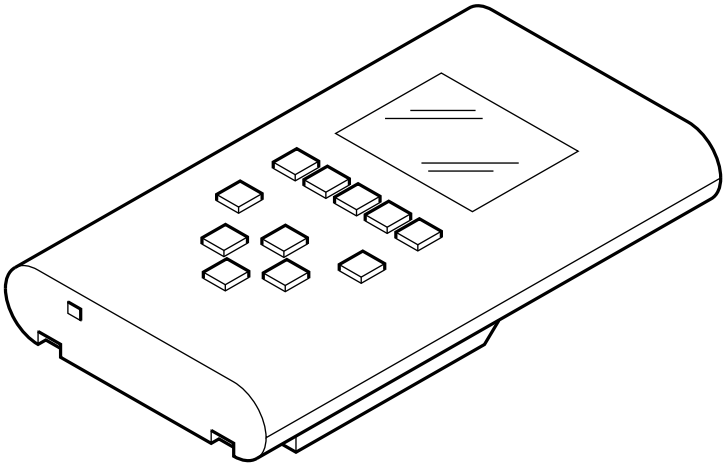
SERVICE MANUAL

JumboTron

MODEL	DEST.
JME-SA200	World



SCREEN ALIGNMENT CONTROLLER

SONY

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injuly, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

WARNING!!

AN INSULATED TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF THE LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY A ⚠ MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION!!

AFIN D'EVITER TOUT RISQUE D'ÉLECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE.
LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ Á L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS ÁLA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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JME-SA200

SONY

3-864-808-**11** (1)

JumboTron Screen Alignment Controller

Operating Instructions
Before operating the unit, please read this manual thoroughly and retain it for future reference.

SECTION 1
OPERATING INSTRUCTIONS

This section is extracted from operation manual.

JumboTron

JME-SA200

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Sony Corporation Printed in Japan

Owner's Record
The model and serial numbers are located on the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. JME-SA200 Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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About This Manual

This instruction manual is mainly aimed at maintenance/service personnel. It explains how to use the JME-SA200 screen alignment controller, which is used to install and adjust the screen of the JumboTron system.
The screen alignment controller is used in combination with the JTC-P200 image control unit (ICU) and JTC-C200 ICU controller. As this manual explains how to use the JTC-P200 and JTC-C200 only briefly, please refer to the Operating Instructions of the JTC-C200 for details.

Precautions

On safety

• Do not use the unit at extremely high or low temperatures.
• Do not use the unit in high humidity.

If any abnormality occurs, turn off the power and consult with qualified Sony service personnel.

On cleaning

Clean the case and front panel with a dry soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any organic solvents, such as alcohol or benzene, which might damage the finish.

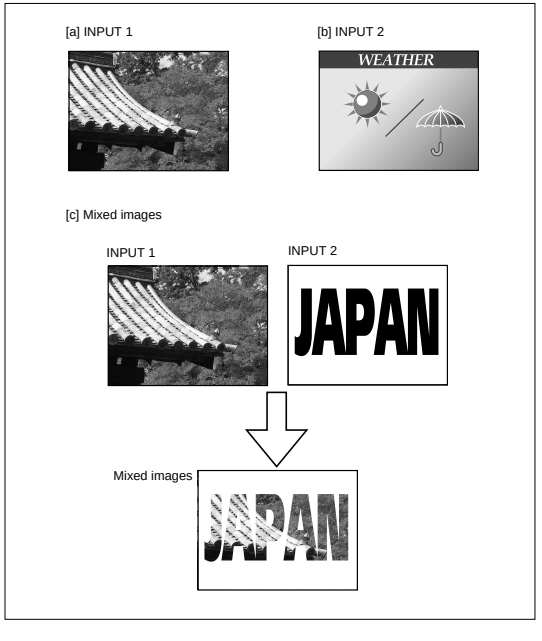
Overview of the JumboTron System

The JumboTron system displays video images on a large screen (JumboTron screen) located either outdoors or indoors. Images from video sources such as a VCR, video camera and computer can be displayed on the screen.
The JumboTron system provides superb bright images with high resolution, regardless of whether it is day or night, indoors or outdoors.

Images to be displayed on the JumboTron screen

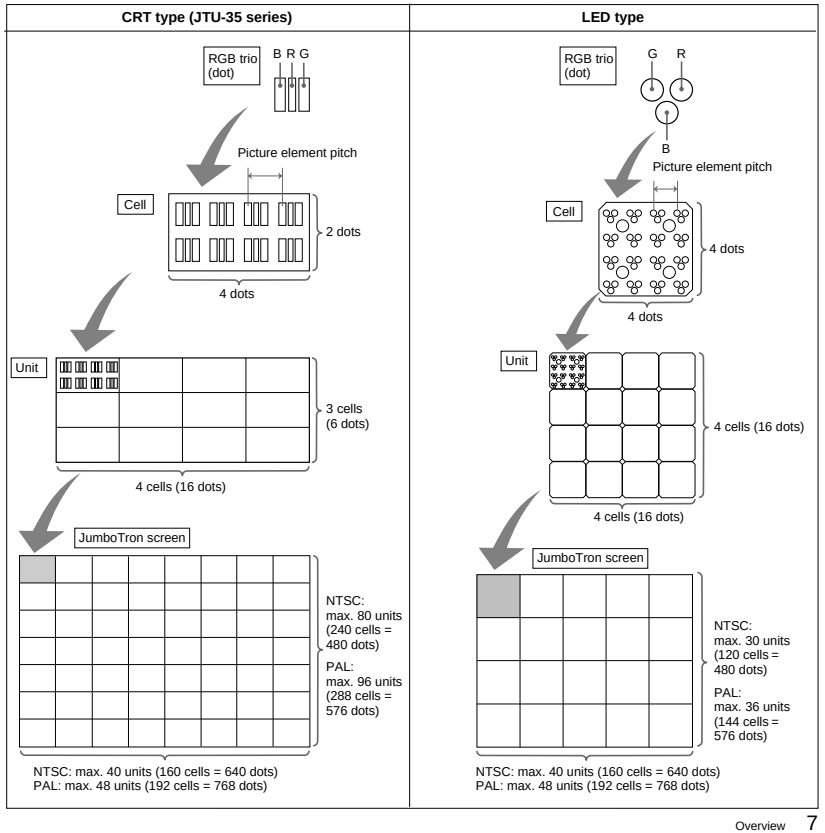
The JumboTron system can display the following three types of images:

[a] Video images input from equipment such as a VCR, video camera and video disc (INPUT 1)
[b] Computer graphics (INPUT 2)
[c] Mixed images of INPUT 1 and INPUT 2
(INPUT 1 images are superimposed on the monochrome area of the INPUT 2 images.)



Structure of the JumboTron screen

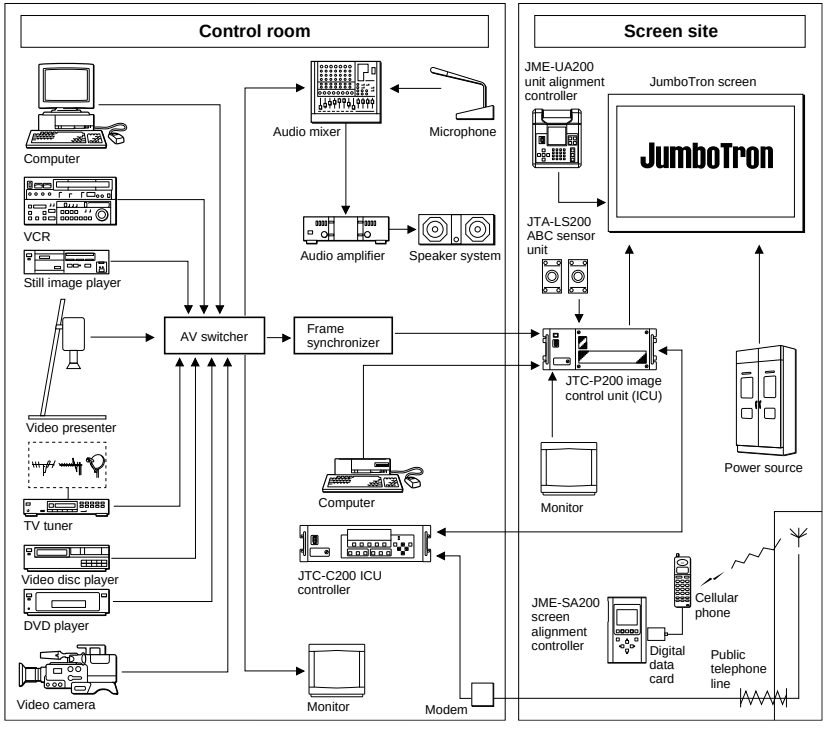
Two types of the JumboTron screen are available. One is the conventional CRT type screen in which light emitting bodies of three primary colors (R, G and B), “Trinilite,” are used as the light emitting element. The other is the new LED type screen in which light emitting diodes of the three primary colors are used.
The basic element of the JumboTron screen is an RGB trio (dot).
A “cell” consists of the dots arranged at a certain interval (picture element pitch) and a “unit (JumboTron display unit)” consists of 12 cells for the CRT type and 16 cells for the LED type.
There are three unit types, the JTU-35 series (with 35-mm picture element pitch) and JTU-17 series (with 17.5-mm pitch) of the CRT type, and the LDU-15 series (with 15-mm pitch) of the LED type. You can configure a large JumboTron screen by arranging the JumboTron display units vertically and horizontally to suit various uses or locations.


CRT type (JTU-35 series)
RGB trio (dot)
B R G
Picture element pitch
Cell
2 dots
4 dots
Unit
3 cells (6 dots)
4 cells (16 dots)
JumboTron screen
NTSC: max. 80 units (240 cells = 480 dots)
PAL: max. 96 units (288 cells = 576 dots)
NTSC: max. 40 units (160 cells = 640 dots)
PAL: max. 48 units (192 cells = 768 dots)
LED type
RGB trio (dot)
G R
B
Picture element pitch
Cell
4 dots
4 dots
Unit
4 cells (16 dots)
4 cells (16 dots)
JumboTron screen
NTSC: max. 30 units (120 cells = 480 dots)
PAL: max. 36 units (144 cells = 576 dots)
NTSC: max. 40 units (160 cells = 640 dots)
PAL: max. 48 units (192 cells = 768 dots)

Overview of the JumboTron System

Configuration of the JumboTron system

The following is the suggested configuration of the JumboTron system.



Features

The JME-SA200 screen alignment controller is designed to check the operation of the JumboTron screen and to adjust the position, size, brightness and picture quality of the image. The wireless remote control system using the public telephone system assures reliable data communication.
The main functions of the JME-SA200 are as follows:

Wireless remote controller using a cellular phone
Interactive data communication is carried out via the cellular phone connected to the JME-SA200 and the modem connected to the JTC-C200 ICU controller. This data communication method using the public telephone system offers a highly reliable wireless remote control system. The JME-SA200 can also be used as a wired remote controller by connecting to the ICU controller using a connecting cable (with a maximum cable length of 1,000 m).

Checking the operation of the screen
Activating the test signal generator built in the display units which constitute the screen, the JME-SA200 displays the stair step and color bar signals on the screen for checking the operation of each display unit.

Adjusting the luminance of a specified unit or cell
The JumboTron screen may partially degrade the brightness or color uniformity after long use. The JME-SA200 can correct the uniformity by adjusting the luminance or color temperature of a specified unit or cell.

Adjusting the position and size of the image
The JME-SA200 can shift the image on the screen vertically or horizontally, and change the image size (expansion/reduction level). The JME-SA200 automatically calculates and displays the aspect ratio of the adjusted image.
The adjusted data can be stored in the memory of the ICU, and recalled instantly by specifying the memory number.

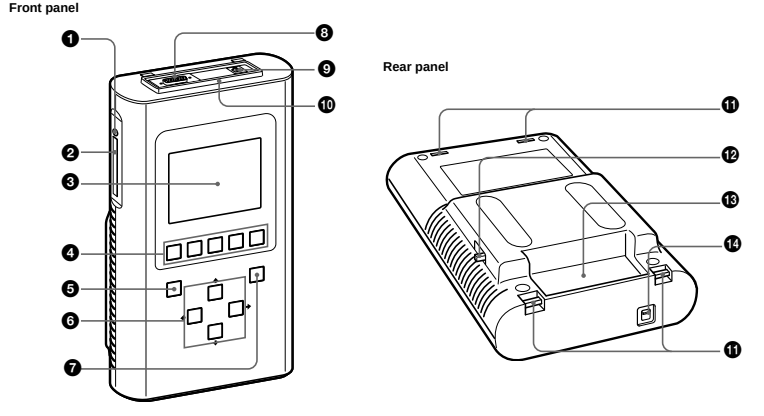
Adjusting the brightness of the image
The JME-SA200 can adjust the brightness of the whole screen to 16 levels.

Setting the area of a computer graphics image mixed with a video image
When displaying a video image over the monochrome portion of a computer graphics image, the JME-SA200 can specify the area to be mixed as R, G and B data.

Adjusting the picture quality on the screen
The JME-SA200 can adjust the color, hue and sharpness of the image on the screen.

Storing up to 256 unit or cell numbers
The JME-SA200 can register up to 256 unit or cell numbers to be adjusted or repaired to store these numbers in the memory of the ICU.

Locations and Functions of Parts and Controls



❶ EJECT (card eject) button (inside)
To eject the digital data card, press the EJECT button inside the unit using the supplied eject tool.

❷ PC CARD (digital data card) slot
Insert the digital data card.

❸ LCD display window

❹ Function buttons (F1 – F5)
The functions of the buttons change with the stage of the operation. The current functions are indicated at the bottom of the display window.
For details, see each section.

❺ MENU button
Returns to the upper directory of the menu.

❻ CURSOR ↓/↑/←/→ buttons
Select the menu items in the display window or change the set values.

❼ ENTER button
Confirms the selected item and stores the set value.

❽ CONTROL connector (D-sub 15-pin)
Connect to the CONTROL 2 connector of the JTC-C200 ICU controller for wired control.

❾ LCD DISPLAY switch
Turns on/off the backlight of the LCD display window. The battery life will be longer if the backlight is turned off.

❿ Connector guard

Note
Use a connector whose size is smaller than the connector guard.

⓫ Shoulder strap attachments
Attach the supplied shoulder strap here. Two sets of the attachments are provided at the top and bottom of the unit.

⓬ POWER switch
Turns the unit on/off.

⓭ Battery pack compartment
Attach the NP-F750 rechargeable battery pack (not supplied) here.

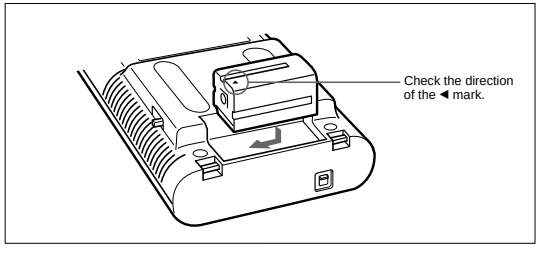
⓮ BATT EJECT (battery eject) lever
Press this lever downward to unlock the battery pack and remove it.

Power Source

The NP-F750 rechargeable battery pack (not supplied) is used for the power source of this unit.
Before attaching the battery pack, charge it using the AC-V615 AC power adaptor (not supplied).
For charging and details of the use of the battery pack, refer to the Operating Instructions supplied with the rechargeable battery pack and the AC power adaptor.

Attaching the battery pack

Attach the battery pack to the battery pack compartment on the rear of the unit.
Insert the battery pack as shown and slide it in the direction of the arrow.
The battery pack is locked in position.



Note
After attaching, confirm that the battery pack is locked firmly. If the battery pack is not locked, it may fall during operation and the adjustment data may be lost.

Battery charging time

When charging the exhausted battery pack using the AC-V615 AC power adaptor, the following charging time is required.
Normal charging time: Approx. 3 hours 30 minutes
Full charging time: Approx. 4 hours 30 minutes
The normal charging time is the time until the charging lamp on the AC power adaptor goes out. The full charging time is the time until the battery pack is fully charged, giving a longer battery life.

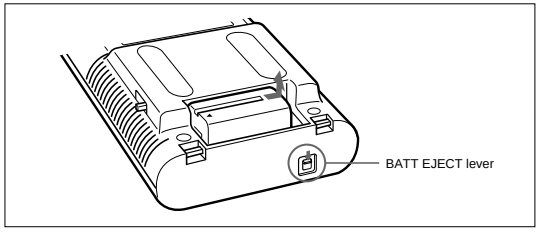
Battery life

When the fully charged battery back is used continuously under normal temperatures, the following battery life is obtained.
When the LCD display window is backlighted: Approx. 3 hours
When the backlight is turned off: Approx. 3 hours 10 minutes
The battery life may vary depending on the ambient temperature or the battery condition.

Power Source

Detaching the battery pack

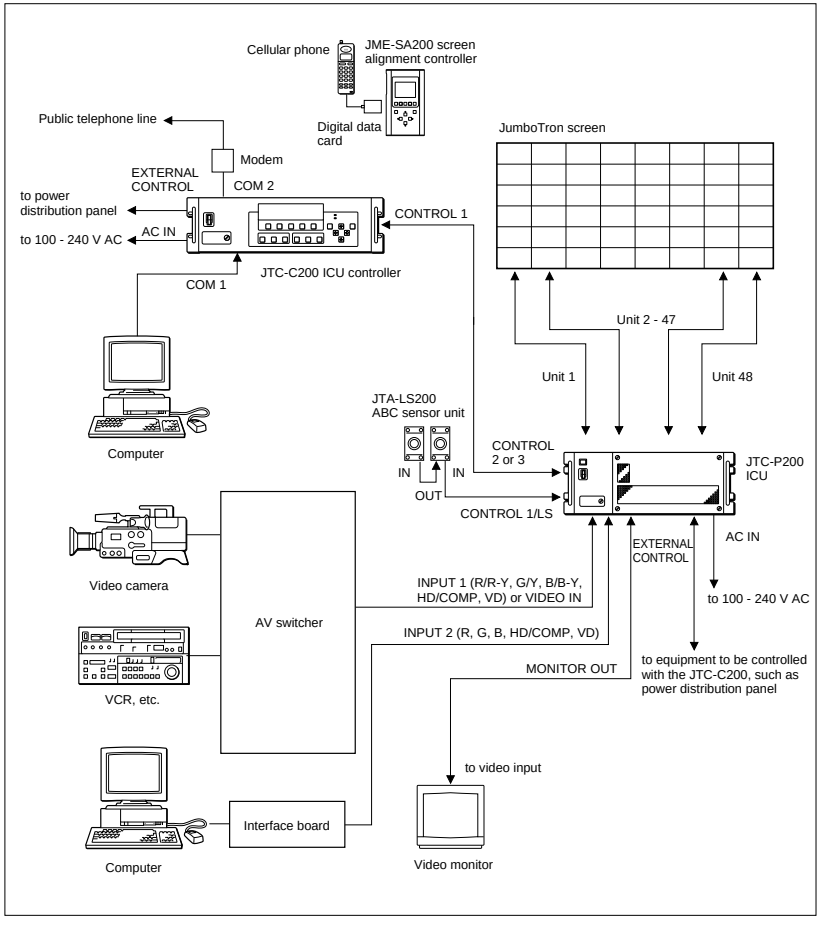
While pressing the BATT EJECT lever downward, slide the battery pack in the direction of the arrow and lift it.



Connections

JumboTron system configuration

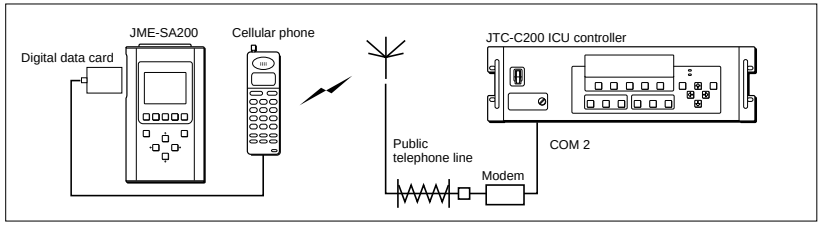
The Sony distributor will take care of all the connections for the whole JumboTron system.
This section explains how to connect the JME-SA200 screen alignment controller.



Connections for using as wireless controller

By connecting the unit to a cellular phone via the digital data card inserted into the unit, interactive data communication can be established between the unit and the JTC-C200 ICU controller using a public telephone system.

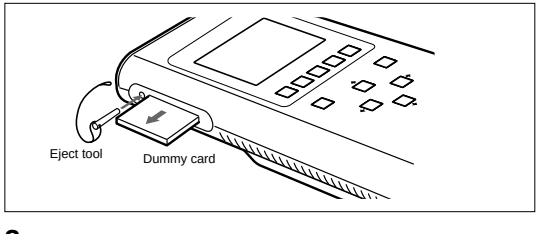
Connecting diagram



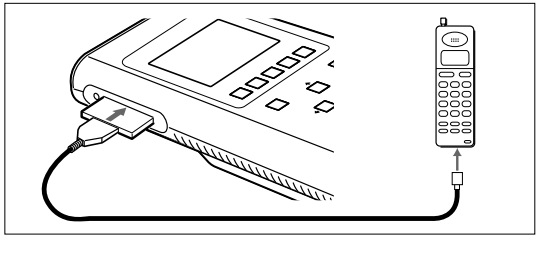
Inserting the digital data card

Prepare a cellular phone, digital data card and connecting cable (not supplied).
For usable equipment, consult with your Sony distributor.

1 Press the EJECT button using the supplied eject tool, and remove the dummy card.



2 Insert the digital data card into the PC CARD slot.

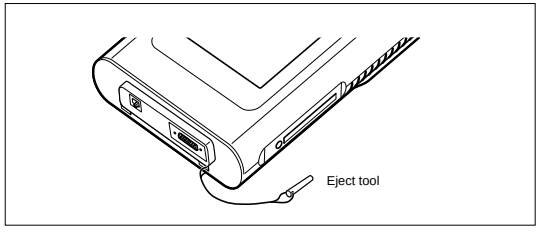


3 Connect the connecting cable of the card to the cellular phone.

4 Register the phone number for the modem connected to the ICU controller.
For registering the phone number, see "Registering the Phone Number for the Modem" on page 17.

Storing the eject tool

You can tie the eject tool to the shoulder strap attachment as illustrated.



Removing the digital data card

1 Press the EJECT button using the supplied eject tool, and remove the digital data card.

2 Insert the dummy card into the slot.

When the unit is not used as a wireless controller

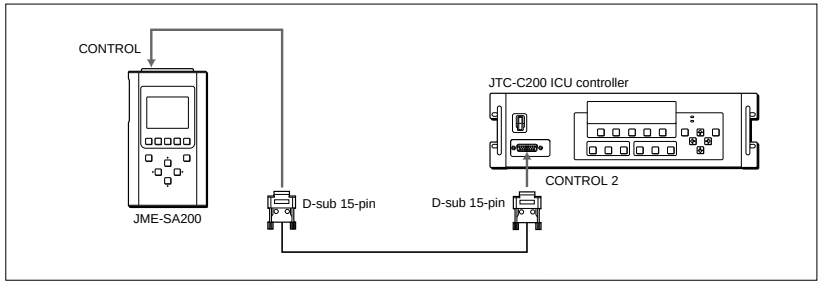
Be sure to insert the dummy card into the PC CARD slot to prevent dust entering the unit.

Connections

Connections for using as wired controller

The unit can be used as a wired remote controller by connecting to the JTC-C200 ICU controller. The connecting cable can be extended up to 1,000 m.

Connecting diagram

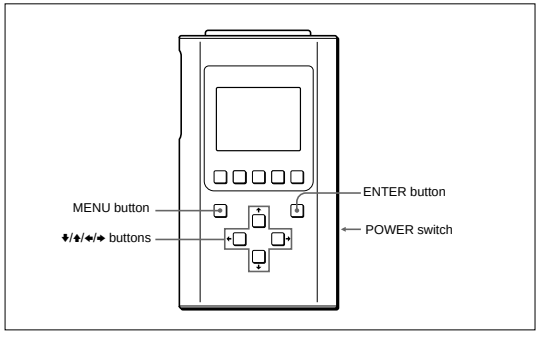


Note

Use a connector whose size is smaller than the connector guard.

Registering the Phone Number for the Modem

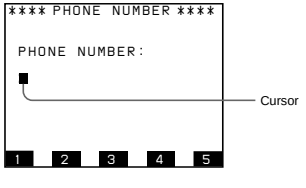
Register the phone number for the modem connected to the ICU controller to this unit. Once it is registered, the unit automatically starts dialing when the power is turned on.



1 Turn off the power of the cellular phone.
If the cellular phone is turned on, the unit will automatically start dialing when the phone number registration is completed.

2 Set the POWER switch of the unit ON.
The title display appears in the display window.

3 Hold down the ← button until the PHONE NUMBER display appears.



(continued)

Registering the Phone Number for the Modem

4 Input the phone number using the F1 to F5 buttons and ↓/↑ buttons. Each function button can be used to input two types of numbers: first, numbers 1 to 5, and by pressing the ↓ button, numbers 6 to 0. To return to numbers 1 to 5, press the ↑ button. The numbers which the F1 to F5 buttons can currently input are shown at the bottom of the display window.

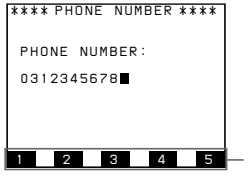
The numbers which the function buttons can input

Function button	F1	F2	F3	F4	F5
By pressing ↑	1	2	3	4	5
By pressing ↓	6	7	8	9	0

- To correct the input number, press the ← button to delete the previously input number.

Example: To input 03-1234-5678

↓→F5→↑→F3→F1→F2→F3→F4→F5→↓→F1 ...
0 3 1 2 3 4 5 6 ...



— Numbers which F1 - F5 buttons can input

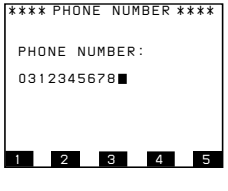
5 When the phone number input is completed, press the ENTER button. The phone number is stored in memory and the PHONE NUMBER display disappears.

Note

Do not press the MENU button before pressing the ENTER button in step **5**. If you do, the PHONE NUMBER display disappears but the input phone number is not stored in the memory.

Changing the registered phone number

1 Perform steps 1 to 3 above to show the PHONE NUMBER display. The registered phone number is displayed.



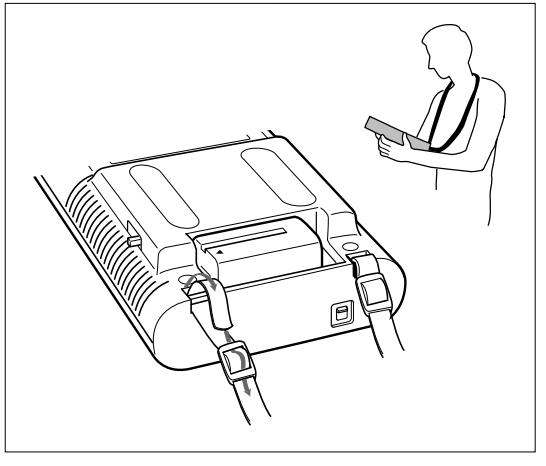
2 Press the ← button repeatedly to delete the phone number.

3 Input a new phone number using the F1 to F5 buttons and ↓/↑ buttons.

4 Press the ENTER button.

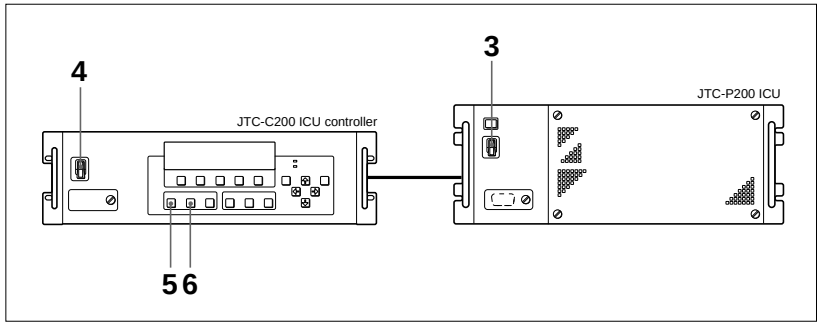
Attaching the Shoulder Strap

Attach the supplied shoulder strap to the shoulder strap attachments and adjust its length.
You can use either of the two sets of the shoulder strap attachments at the top or bottom of the unit.



Preparing the System

Do the following before remote control operation with this unit.
For details, read the Operating Instructions supplied with the JTC-C200 ICU controller.



1 Turn on the power switch of the power distribution panel which supplies the power to the JumboTron system.

2 Turn on the equipment which sends the images, such as VCRs and computers.

3 Press the I side of the POWER switch on the ICU.

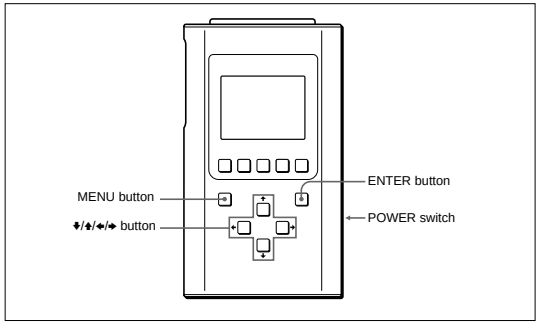
4 Press the I side of the POWER switch on the ICU controller to turn on the power of the ICU controller.

5 Hold down the ICU button on the ICU controller for more than a second to turn on the power of the ICU.

6 Hold down the SCREEN button on the ICU controller for more than a second to turn on the power of the JumboTron screen.

Communicating with the ICU Controller

When performing adjustment with this unit, first establish communication with the JTC-C200 ICU controller.
The method of making communication varies depending on the remote control system: wireless or wired.



When the unit is used as wireless controller

- Connect the cellular phone to the unit.
- Make sure that the phone number for the modem connected to the ICU controller has been registered.

For connecting the cellular phone, see page 14. For registering the phone number, see page 17.

1 Turn on the power of the cellular phone.

2 Set the POWER switch on the unit to ON.
The title display appears in the display window, and the unit automatically starts dialing.

```
     JUMBOTRON
MAINTENANCE EQUIPMENT
     JME-SA200
```

When communication is established, the MAIN MENU appears in the display window.

```
****** MAIN MENU ******

  SWITCHER CONTROL
  SIGNAL CONTROL
  GEOMETRY CONTROL
  MONITOR CONTROL
  SCREEN CONTROL
  SCREEN UNIT CONTROL
  OTHER CONTROL
```

(continued)

Notes

- The time required for establishing communication depends on the communication conditions. If the MAIN MENU does not appear after 1 minute has elapsed, turn off the POWER switch and turn it on again.
- If the phone number has not been registered, the cellular phone is not connected correctly or the power of the cellular phone is not turned on, the unit cannot start dialing and the title display remains.

When the unit is used as wired controller

Set the POWER switch on the unit to ON.
The title display appears in the display window.

```
     JUMBOTRON
MAINTENANCE EQUIPMENT
     JME-SA200
```

When communication is established, the MAIN MENU appears in the display window.

```
****** MAIN MENU ******

  SWITCHER CONTROL
  SIGNAL CONTROL
  GEOMETRY CONTROL
  MONITOR CONTROL
  SCREEN CONTROL
  SCREEN UNIT CONTROL
  OTHER CONTROL
```

Note

The time required for establishing communication depends on the communication conditions. If the MAIN MENU does not appear after 1 minute has elapsed, turn off the POWER switch and turn it on again.

Setting the Information about the Screen

Before using the unit, set the information about your JumboTron system, such as the number of display units constituting the screen. If the correct information is not set, the adjustments cannot be performed correctly.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select SCREEN CONTROL and press the ENTER button.
The SCREEN CONTROL menu appears.

```
****** MAIN MENU ******

  SWITCHER CONTROL
  SIGNAL CONTROL
  GEOMETRY CONTROL
  MONITOR CONTROL
  SCREEN CONTROL
  SCREEN UNIT CONTROL
  OTHER CONTROL
```

⇨

```
*** SCREEN CONTROL ***

 UNIT TYPE:LDU-15
 NUMBER OF UNIT
  X: 40  Y: 30  Z: 1
 BRIGHTNESS:       15
 MIXLEVEL
  RED MAX: 40 MIN:  0
  GRN MAX: 40 MIN:  0
  BLU MAX: 40 MIN:  0
```

3 Set the number of display units constituting the screen.
Press the ↓ or ↑ button to select X, Y or Z and press the ← or → button to change the number.
By pressing the ↓ button, X, Y and Z are selected in order. By pressing the ↑ button, they are selected in the reverse order.

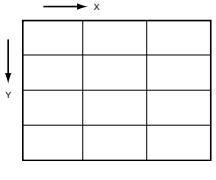
```
*** SCREEN CONTROL ***

 UNIT TYPE:LDU-15
 NUMBER OF UNIT
  X: 10  Y: 30  Z: 1
 BRIGHTNESS:       15
 MIXLEVEL
  RED MAX: 40 MIN:  0
  GRN MAX: 40 MIN:  0
  BLU MAX: 40 MIN:  0
```

Currently selected display unit type

X: Number of units in horizontal direction
Y: Number of units in vertical direction
Z: Number of screens

Example: For a screen with 3 units horizontally and 4 units vertically, set to X: 3, Y: 4.



Note

If only one screen is installed, do not change "Z" from 1. If a number other than 1 is set, the unit cannot perform the adjustments.

4 After setting, press the ENTER button.
The set data are stored in memory.

(continued)

Setting the Information about the Screen

To return to the MAIN MENU
Press the MENU button.

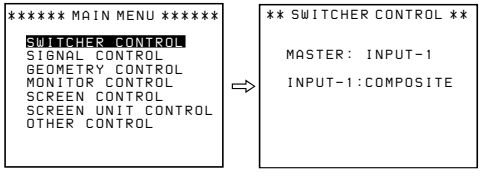
Note
Do not press the MENU button before pressing the ENTER button in step **4**. If you do, the set data are not stored in the memory.

Selecting the Screen Display Mode and Input Signal

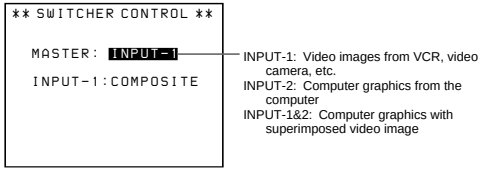
Like the JTC-C200 ICU controller, you can select the screen display mode for the images to be displayed on the screen and the type of the video input signal with this unit.
As the GEOMETRY CONTROL data and the SIGNAL CONTROL data are stored in the memory for each input signal type, select the input signal correctly before adjustment.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

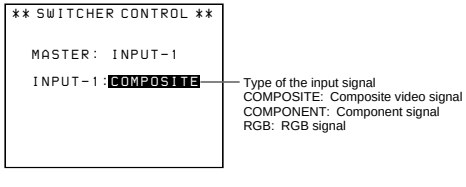
2 Press the ↓ or ↑ button to select SWITCHER CONTROL and press the ENTER button.
The SWITCHER CONTROL menu appears.



3 Select the screen display mode.
Press the ↓ or ↑ button to select MASTER and press the ← or → button to select the display mode.


** SWITCHER CONTROL **
MASTER: INPUT-1
INPUT-1:COMPOSITE
INPUT-1: Video images from VCR, video camera, etc.
INPUT-2: Computer graphics from the computer
INPUT-1&2: Computer graphics with superimposed video image

4 When INPUT-1 is selected for MASTER, select the type of the input signal.
Press the ↓ or ↑ button to select INPUT-1 and press the ← or → button to select the type of the input signal. The selected signal is displayed on the screen.



To return to the MAIN MENU
Press the MENU button.

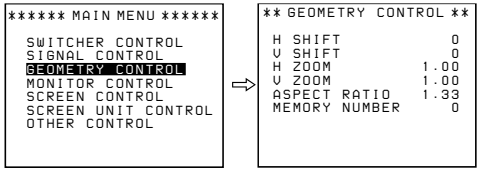
Adjusting the Image Position and Size on the Screen

You can shift the position of the image on the screen vertically and horizontally, and expand or reduce its size. The adjusted data can be stored in memory.
For the INPUT-1 image (composite video or component signal), the position and size are adjustable.
For the INPUT-2 image (computer graphics), only the position is adjustable.
To select the memory number to which you want to store the adjusted data, see "Selecting the memory number/adjusting the screen by recalling the stored conditions" on page 28.

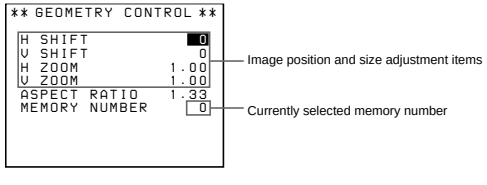
Adjusting the position and size of the image

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select GEOMETRY CONTROL and press the ENTER button.
The GEOMETRY CONTROL menu appears.



3 Adjust the position and size of the image on the screen.
Press the ↓ or ↑ button to select the adjustment item and press the ← or → button to change the value.



Adjustment item	How to adjust
H SHIFT	Shifts the image horizontally in units of dot. Pressing the → button moves the image to the right, and pressing the ← button to the left.
V SHIFT	Shifts the image vertically in units of dot. Pressing the → button moves the image upward, and pressing the ← button downward.
H ZOOM	Adjusts the horizontal image size. Pressing the → button expands the image horizontally, and pressing the ← button reduces it.
V ZOOM	Adjusts the vertical image size. Pressing the → button expands the image vertically, and pressing the ← button reduces it.

4 After adjustment, press the ENTER button.
The adjusted data are stored to the currently selected memory number.

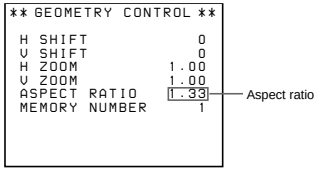
To return to the MAIN MENU
Press the MENU button.

Note
Do not press the MENU button before pressing the ENTER button in step **4**. If you do, the adjusted data are not stored in the memory.

Displaying the aspect ratio

When you change the image size with H ZOOM and V ZOOM, the aspect ratio of the adjusted image is calculated and displayed on ASPECT RATIO.

Example: Aspect ratio is 1.33 when the image size is 4 : 3
Aspect ratio is 1.78 when the image size is 16 : 9

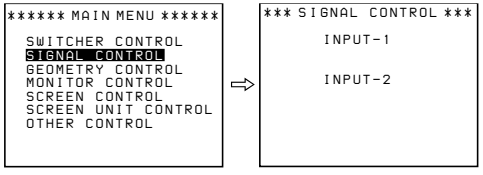


Selecting the memory number/adjusting the screen by recalling the stored conditions

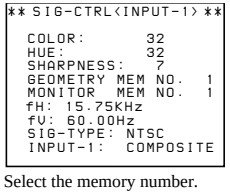
By selecting the memory number, you can change the image position and size on the screen to the conditions stored to that memory number.
When you want to store the image position and size data to the specified memory number after adjustment, you should select the memory number before the adjustment, performing the following steps.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

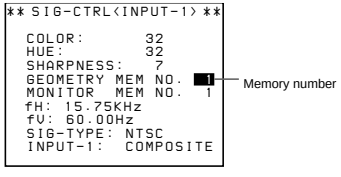
2 Press the ↓ or ↑ button to select SIGNAL CONTROL and press the ENTER button.
The SIGNAL CONTROL menu appears.



3 Press the ↓ or ↑ button to select the input (INPUT-1 or INPUT-2) and press ENTER button.
The SIG-CTRL menu appears.



4 Select the memory number.
Press the ↓ or ↑ button to select GEOMETRY MEM NO. and press the ← or → button to select the memory number 0 – 31 to which the desired conditions are stored.



5 Press the ENTER button.
The screen is adjusted to the stored conditions.

To return to the MAIN MENU
Press the MENU button.

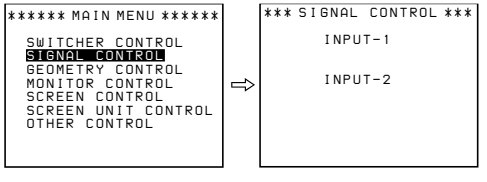
Adjusting the Picture on the Screen

You can check the information about the input signal and picture quality of the image on the screen in the display window of the unit.
You can also adjust the picture quality: color, hue and sharpness for the composite video signal, or color and hue for the component signal.

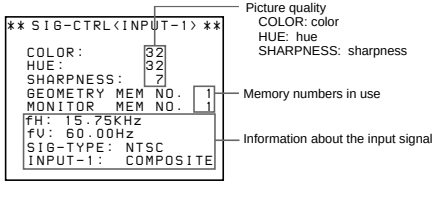
Checking the input signal and picture quality

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select SIGNAL CONTROL and press the ENTER button.
The SIGNAL CONTROL menu appears.

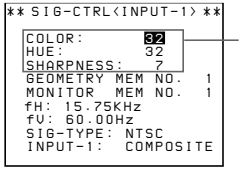


3 Press the ↓ or ↑ button to select the input (INPUT-1 or INPUT-2) and press ENTER button.
The SIG-CTRL menu appears.



Adjusting the color, hue and sharpness

1 Press the ↓ or ↑ button to select the item you want to adjust and press the ← or → button to adjust it.



Adjustment item	How to adjust
COLOR	Adjusts the color. Pressing the → button increases the color intensity; pressing the ← button decreases the color intensity. Adjustable range is 0 - 63.
HUE	Adjusts the color tint. Pressing the → button makes the picture greener; pressing the ← button makes the picture purpler. Adjustable range is 0 - 63.
SHARPNESS	Adjusts the sharpness. Pressing the → button makes the picture sharper; pressing the ← button makes the picture softer. Adjustable range is 0 - 15.

2 After adjusting, press the ENTER button.
The adjusted data are stored in memory.

To return to the MAIN MENU

Press the MENU button.

Notes

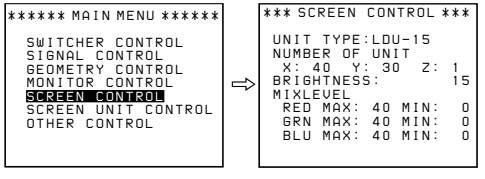
- Do not press the MENU button before pressing the ENTER button in step **2**. If you do, the adjusted data are not stored in the memory.
- The hue cannot be adjusted for the picture input from PAL color sources. In this case, "HUE: – –" appears.

Adjusting the Brightness of the Screen

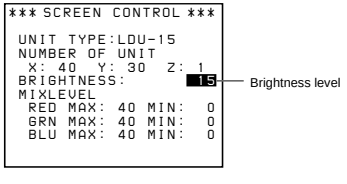
You can adjust the brightness of the screen to 16 levels. Perform the adjustment when the image to be adjusted is displayed on the screen.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select SCREEN CONTROL and press the ENTER button.
The SCREEN CONTROL menu appears.



3 Press the ↓ or ↑ button to select BRIGHTNESS and press the ← or → button to adjust the brightness level.
The brightness level is adjustable in a range of 1 – 16. The higher the level is, the brighter the screen becomes.



4 Press the ENTER button.
The adjusted level is stored in memory.

To return to the MAIN MENU

Press the MENU button.

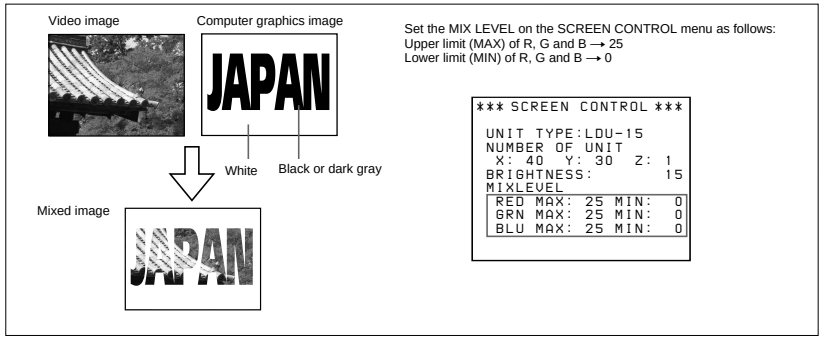
Note

Do not press the MENU button before pressing the ENTER button in step **4**. If you do, the adjusted data are not stored in the memory.

Adjusting the Computer Graphics and Video Image Mix Level

You can display a video image over the monochrome portion of a computer graphics image by selecting the MIX mode on the JTC-C200 or the INPUT-1&2 mode on this unit.
To specify the area of the computer graphics image to be mixed with the video image, set the data for the upper limit (MAX) and lower limit (MIN) of the R, G and B levels.

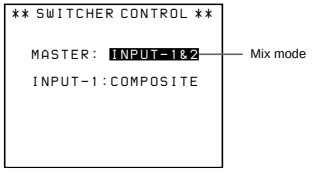
Example: To display the video image on the black and dark gray portion of the computer graphics image


Video image
Computer graphics image
JAPAN
White
Black or dark gray
Mixed image
JAPAN
Set the MIX LEVEL on the SCREEN CONTROL menu as follows:
Upper limit (MAX) of R, G and B → 25
Lower limit (MIN) of R, G and B → 0
*** SCREEN CONTROL ***
UNIT TYPE:LDU-15
NUMBER OF UNIT
X: 40 Y: 30 Z: 1
BRIGHTNESS: 15
MIXLEVEL
RED MAX: 25 MIN: 0
GRN MAX: 25 MIN: 0
BLU MAX: 25 MIN: 0

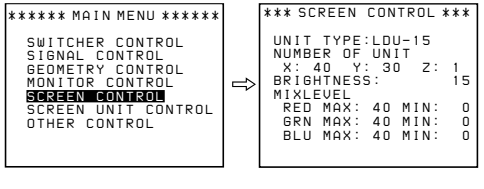
Adjusting the mix level

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

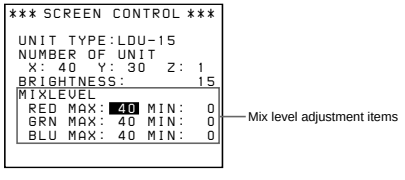
2 Set the screen display mode to the mix mode.
Press the MIX button on the JTC-C200 or select MASTER on the SWITCHER CONTROL menu of this unit to INPUT-1&2.



3 Display the MAIN MENU, press the ↓ or ↑ button to select SCREEN CONTROL and press the ENTER button.
The SCREEN CONTROL menu appears.



4 Set the MAX and MIN levels of R, G and B.
Press the ↓ or ↑ button to select the MIX LEVEL item you want to adjust and press the ← or → button to adjust its level.
By pressing the ↓ button, the items are selected in order: RED MAX → GRN MAX → BLU MAX → RED MIN → GRN MIN → BLU MIN. By pressing the ↑ button, they are selected in the reverse order.
The adjustable range for each item is 0 – 255.



5 Press the ENTER button.
The adjusted data are stored in memory.

To return to the MAIN MENU
Press the MENU button.

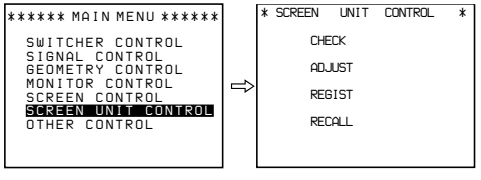
Note
Do not press the MENU button before pressing the ENTER button in step **5**. If you do, the adjusted data are not stored in the memory.

Checking the Screen Display Unit

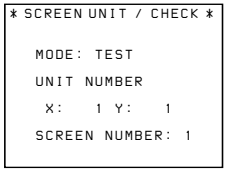
You can display the test patterns automatically and repeatedly on a specified screen display unit to check if the unit is operating properly. This function is useful when checking on the cause of a malfunction of the unit, or after adjusting, repairing or replacing the unit.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

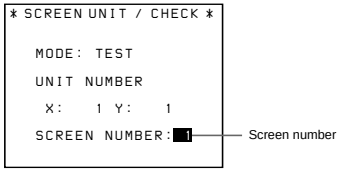
2 Press the ↓ or ↑ button to select SCREEN UNIT CONTROL and press the ENTER button.
The SCREEN UNIT CONTROL menu appears.



3 Press the ↓ or ↑ button to select CHECK and press the ENTER button.
The SCREEN UNIT/CHECK menu appears.



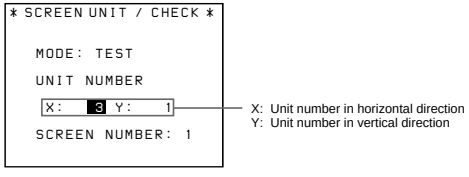
4 If two or more screens are installed, select the screen number.
Press the ↓ or ↑ button to select SCREEN NUMBER and press the ← or → button to change the number.



Note

If only one screen is installed, do not change SCREEN NUMBER from 1. If a number other than 1 is set, the test pattern cannot be displayed even if you assign the unit number correctly.

5 Assign the unit number.
Press the ↓ or ↑ button to select X or Y of UNIT NUMBER and press the ← or → button to change the number.
By pressing the ↓ button, X and Y are selected in order. By pressing the ↑ button, they are selected in the reverse order.


* SCREEN UNIT / CHECK *
MODE: TEST
UNIT NUMBER
X: 3 Y: 1
SCREEN NUMBER: 1
X: Unit number in horizontal direction
Y: Unit number in vertical direction

6 Press the ENTER button.
The test pattern is displayed on the assigned unit. The stair step and color bars (and beam blanking for the CRT type unit only) change automatically on the unit. Check if the unit is operating properly.

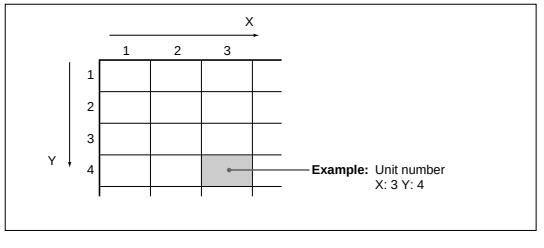
Test pattern	Operating and circuit to be checked
Stair step (data of the same bit)	Bit errors, etc
Color bars	Data latch timing, etc.
Beam blanking (switching the blanking line)	Cathode switching circuit, etc. (CRT type unit only)

To stop the test pattern display

Press the MENU button. The display window returns to the MAIN MENU.

Counting the unit number

The top-left unit on the screen is counted as number 1 for either horizontal (X) or vertical (Y) direction.

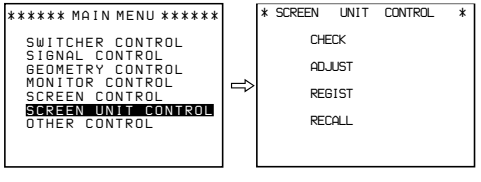


Adjusting the Luminance of a Specified Unit or Cell

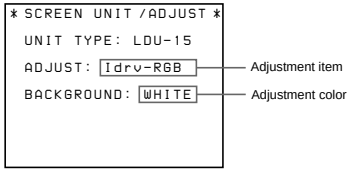
If the brightness or the color temperature of the image on the screen differs partially, you can adjust the luminance of a specified unit or cell.
The luminance adjustment can be performed for the R, G and B colors simultaneously, or for each color separately. We recommend that you first perform the 3-color adjustment to correct the brightness difference approximately before adjusting each color.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select SCREEN UNIT CONTROL and press the ENTER button.
The SCREEN UNIT CONTROL menu appears.



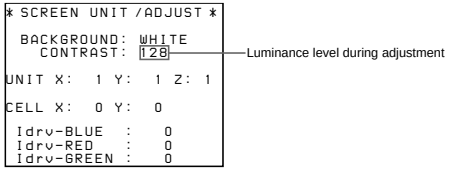
3 Press the ↓ or ↑ button to select ADJUST and press the ENTER button.
The SCREEN UNIT/ADJUST menu appears.



4 Select the adjustment item and adjustment color.
Press the ↓ or ↑ button to select ADJUST and press the ← or → button to select the desired adjustment item. Then, press the ↓ or ↑ button to select BACKGROUND and press the ← or → button to select the adjustment color (the color of the entire display during adjustment).
By pressing the → button, the adjustment item changes in the order shown in the following table. By pressing the ← button, they are selected in the reverse order. The adjustment color selection is limited by the adjustment item.

Item	Adjustment	Adjustment color
Idrv-RGB	Adjusts the luminance of red, green and blue simultaneously.	WHITE
Idrv-BLUE	Adjusts the luminance of blue.	WHITE, BLUE
Idrv-RED	Adjusts the luminance of red.	WHITE, RED
Idrv-GREEN	Adjusts the luminance of green.	WHITE, GREEN

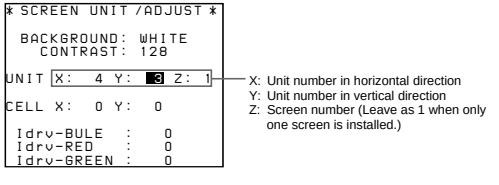
5 Press the ENTER button.
The whole screen turns to the selected adjustment color.
The display window proceeds to the adjustment menu (SCREEN UNIT/ADJUST).



6 Press the ↓ or ↑ button to select CONTRAST and press the ← or → button to set the luminance level of the whole screen. Then, press the ENTER button.
Set to the luminance level to which you can easily perform the adjustment.

7 Assign the unit number.
Press the ↓ or ↑ button to select X, Y or Z of UNIT and press the ← or → button to change the number.
By pressing the ↓ button, X, Y and Z are selected in order. By pressing the ↑ button, they are selected in the reverse order. The selected unit starts flashing.

Example: To assign the unit which is the 4th from the left and the 3rd from the top, set to X : 4, Y : 3.
The top-left unit on the screen is counted as number 1 for either horizontal (X) or vertical (Y) direction.


* SCREEN UNIT /ADJUST *
BACKGROUND: WHITE
CONTRAST: 128
UNIT X: 4 Y: 3 Z: 1
X: Unit number in horizontal direction
Y: Unit number in vertical direction
Z: Screen number (Leave as 1 when only one screen is installed.)
CELL X: 0 Y: 0
Idrv-BULE : 0
Idrv-RED : 0
Idrv-GREEN : 0

8 Press the ENTER button.
The cursor moves to CELL X.

9 When adjusting the luminance of a specified cell, assign the cell number.
Press the ↓ or ↑ button to select X (horizontal number) or Y (vertical number) of CELL and press the ← or → button to change the number. (Leave them as CELL X: 0, Y: 0 when adjusting the entire unit.)
By pressing the ↓ button, X and Y are selected in order. By pressing the ↑ button, they are selected in the reverse order.
The top-left cell on the unit is counted as number 1 for either horizontal (X) or vertical (Y) direction.

10 Press the ENTER button.
The selected unit or cell stops flashing.

(continued)

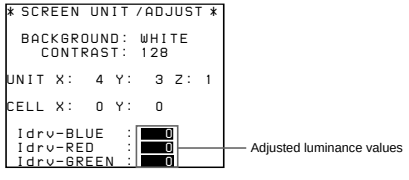
Adjusting the Luminance of a Specified Unit or Cell

11 Adjust the luminance.

Press the ← or → button to adjust the luminance by observing the screen. The currently stored luminance level is displayed as "0." Press the → button to increase the luminance, and the ← button to decrease it.

When WHITE is selected for the adjustment color, pressing the ← or → button changes the data of three colors simultaneously.

When the specified color is selected, pressing the ← or → button changes the data of the specified color only. Non-adjustable items are indicated with "– – –."



12 Press the ENTER button.

The adjusted data are stored in memory.

To adjust the same item for another unit or cell

For another cell, press the ↑ button once and repeat from the cell assignment (step **9**).

For another unit, press the ↑ button twice and repeat from the unit assignment (step **7**).

To adjust another item

Press the MENU button once to return to the SCREEN UNIT ADJUST menu. Press the ↓ or ↑ button to select ADJUST and repeat from the selection of the adjustment item and adjustment color (step **4**).

Notes

- The luminance values displayed on the screen show the increment or decrement to the currently stored luminance data displayed as "0." These values are only used as a guide for the adjustment, and do not indicate the actual luminance levels.
- Do not press the MENU button before pressing the ENTER button in step **12**. If you do, the adjusted data are not stored in the memory.

Registering and Recalling the Unit/Cell Numbers

The JME-SA200 can register up to 256 unit/cell numbers to be stored in memory. This function is useful especially when you check the unit or cell to be adjusted or replaced and note its number.

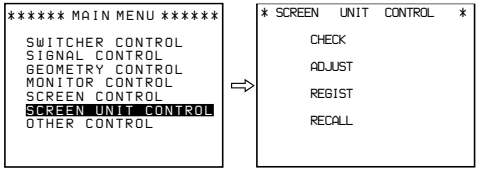
When recalling a registered unit or cell, the indicator on the rear panel of the corresponding unit flashes. It is convenient when you inspect or replace the unit from the back of the screen.

Registering the unit/cell number

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

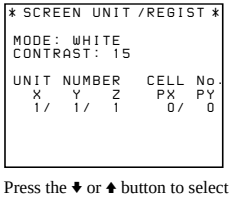
2 Press the ↓ or ↑ button to select SCREEN UNIT CONTROL and press the ENTER button.

The SCREEN UNIT CONTROL menu appears.



3 Press the ↓ or ↑ button to select REGIST and press the ENTER button.

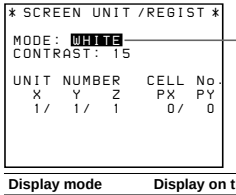
The SCREEN UNIT/REGIST menu appears.



4 Press the ↓ or ↑ button to select MODE and press the ← or → button to select the display mode during registration.

Select the display mode in which you can easily identify the unit.

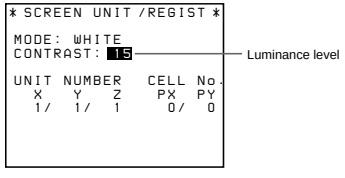
By pressing the → button, the display mode changes in the order shown in the following table. By pressing the ← button, they are selected in the reverse order.



Display mode	Display on the screen
WHITE	The whole screen turns to white and the specified unit or cell flashes.
CUT OFF	The whole screen turns to black and the specified unit or cell flashes.
FRAME	The frame of the specified unit (that is, the outmost dots around the unit) lights. You cannot specify the cell in this mode.

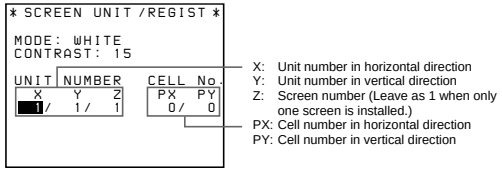
(continued)

5 Press the ↓ or ↑ button to select CONTRAST and press the ← or → button to set the luminance level of the whole screen. Set to the luminance level at which you can easily observe the display mode.



6 Assign the unit/cell number you want to register.
Press the ↓ or ↑ button to select X, Y or Z of UNIT NUMBER or PX or PY of CELL No. and press the ← or → button to change the number. (Leave CELL No. PX: 0, PY: 0 to specify the whole unit.)
By pressing the ↓ button, X, Y, Z, PX and PY are selected in order. By pressing the ↑ button, they are selected in the reverse order. The specified unit flashes when WHITE or CUT OFF is selected, or the frame of the specified unit lights when FRAME is selected.

The top-left unit or cell on the screen is counted as number 1 for either horizontal (X) or vertical (Y) direction.


* SCREEN UNIT /REGIST *
MODE: WHITE
CONTRAST: 15
UNIT NUMBER
X Y Z
1/ 1/ 1
CELL No.
PX PY
0/ 0
X: Unit number in horizontal direction
Y: Unit number in vertical direction
Z: Screen number (Leave as 1 when only one screen is installed.)
PX: Cell number in horizontal direction
PY: Cell number in vertical direction

7 Press the ENTER button.
The specified unit/cell number is stored in memory and "WRITE COMPLETE!!" appears.

To register another unit/cell number

Repeat from the unit/cell number assignment (step **6**).

To register the unit/cell number in another mode

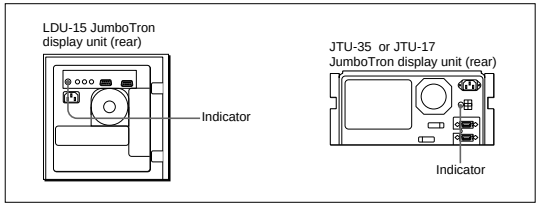
Press the MENU button once to return to the SCREEN UNIT CONTROL display and repeat from the selection of REGIST (step **3**).

Notes

- Do not press the MENU button before pressing the ENTER button in step **6**. If you do, the specified unit/cell number is not stored in the memory.
- If the specified unit/cell number could not be stored correctly by pressing the ENTER button in step **7**, "WRITE INCOMPLETE!!" appears. In this case, try to store it again.

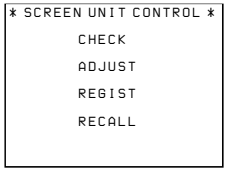
Recalling the registered unit or cell

When you recall a registered unit or cell, the indicator on the rear panel of the corresponding unit flashes.

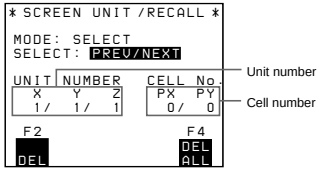


1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select SCREEN UNIT CONTROL and press the ENTER button.
The SCREEN UNIT CONTROL menu appears.



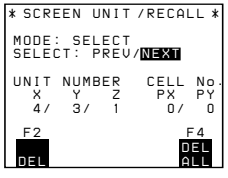
3 Press the ↓ or ↑ button to select RECALL and press the ENTER button.
The SCREEN UNIT/RECALL menu appears. The unit/cell number stored first in the memory is displayed.



(continued)

Registering and Recalling the Unit/Cell Numbers

4 Recall the registered units/cells one by one.
As you press the ➡ button, the registered unit/cell numbers are recalled in the display window one by one. By pressing the ⬅ button, they are recalled in the reverse order.



To flash the indicator on the rear panel of the unit
After recalling the unit/cell number in step **4**, press the ENTER button.

To stop flashing of the indicator
Press the MENU button. The display window returns to the SCREEN UNIT CONTROL menu, and the indicator on the rear panel of the unit stops flashing.

Notes
- If you press the ENTER button when there is no registered unit/cell numbers, “DATA NOTHING!!” appears.
- If you press the ➡ button when the last registered unit/cell number is recalled, “Read NEXT NO DATA” appears.
- If you press the ⬅ button when the first registered unit/cell number is recalled, “Read PREV NO DATA” appears.

Deleting the registered unit/cell number(s) from the memory

Use the F2 or F4 function button.

To delete all the registered unit/cell numbers
Press the F4 button.

To delete a specified unit/cell number
Recall the unit/cell number to be deleted, then press the F2 button.

Note
If you press the F2 or F4 button when there is no unit/cell number(s) to be deleted, “DATA NOTHING!!” appears.

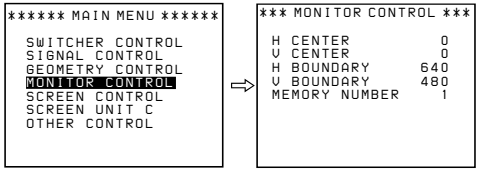
Adjusting the Monitor

You can adjust the position of the image and its boundary on the monitor connected to the JTC-P200 ICU.
To select the memory number to which you want to store the adjusted data, see “Selecting the memory number/adjusting the monitor by recalling the stored conditions” on page 45.

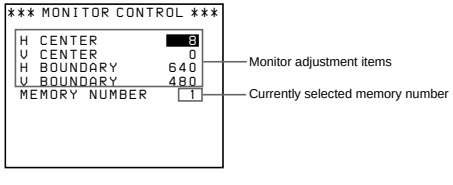
Adjusting the position and boundary of the image on the monitor

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ⬇ or ⬆ button to select MONITOR CONTROL and press the ENTER button.
The MONITOR CONTROL menu appears.



3 Adjust the position and boundary of the image on the monitor.
Press the ⬇ or ⬆ button to select the adjustment item and press the ⬅ or ➡ button to change the value.



Adjustment item	How to adjust
H CENTER	Shifts the position of the image horizontally. Pressing the ➡ button moves the image to the right, and pressing the ⬅ button to the left.
V CENTER	Shifts the position of the image vertically. Pressing the ➡ button moves the image upward, and pressing the ⬅ button downward.
H BOUNDARY	Adjusts the horizontal boundary of the image. Pressing the ➡ button expands the horizontal boundary, and pressing the ⬅ button reduces it.
V BOUNDARY	Adjusts the vertical boundary of the image. Pressing the ➡ button expands the vertical boundary, and pressing the ⬅ button reduces it.

(continued)

4 After adjustment, press the ENTER button.
The adjusted data are stored to the currently selected memory number.

To return to the MAIN MENU
Press the MENU button.

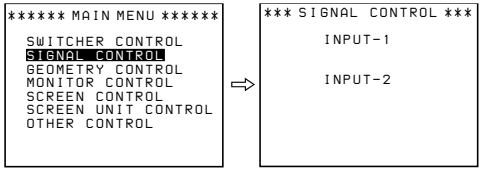
Note
Do not press the MENU button before pressing the ENTER button in step **4**. If you do, the adjusted data are not stored in the memory.

Selecting the memory number/adjusting the monitor by recalling the stored conditions

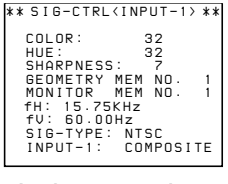
By selecting the memory number, you can change the monitor screen to the conditions stored to that memory number.
When you want to store the image position and boundary data to the specified memory number after adjustment, you should select the memory number before the adjustment, performing the following steps.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

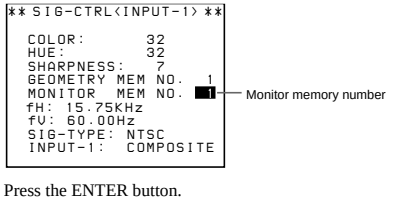
2 Press the ↓ or ↑ button to select SIGNAL CONTROL and press the ENTER button.
The SIGNAL CONTROL menu appears.



3 Press the ↓ or ↑ button to select the input (INPUT-1 or INPUT-2) and press ENTER button.
The SIG-CTRL menu appears.



4 Select the memory number.
Press the ↓ or ↑ button to select MONITOR MEM NO. and press the ← or → button to select the memory number 0 – 31 to which the desired conditions are stored.



5 Press the ENTER button.
The monitor is adjusted to the conditions stored to the selected memory number.

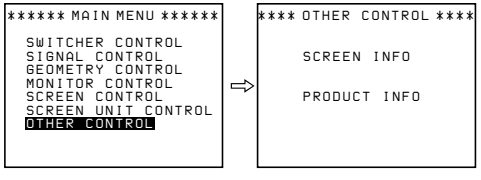
To return to the MAIN MENU
Press the MENU button.

Cutting Off the Image from the Screen

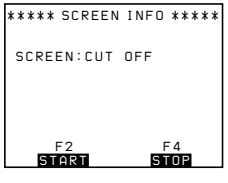
You can make the image on the screen disappear. This function is useful when you check the light-emitting condition of the screen.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

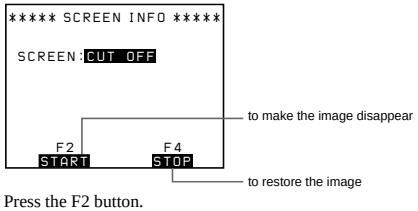
2 Press the ↓ or ↑ button to select OTHER CONTROL and press the ENTER button.
The OTHER CONTROL menu appears.



3 Press the ↓ or ↑ button to select SCREEN INFO and press the ENTER button.
The SCREEN INFO menu appears.



4 Press the ← or → button to select CUT OFF.



5 Press the F2 button.
The image disappears from the screen.

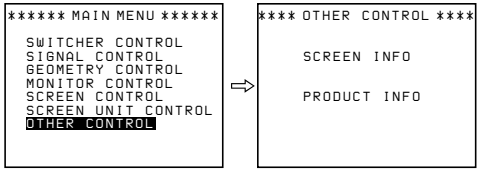
To restore the image
Press the F4 button.

Displaying the Unit Address on the Screen

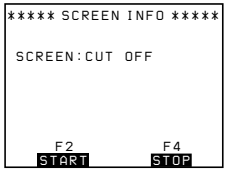
You can display the numbers set by the address switches located on the rear of the unit on the screen.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

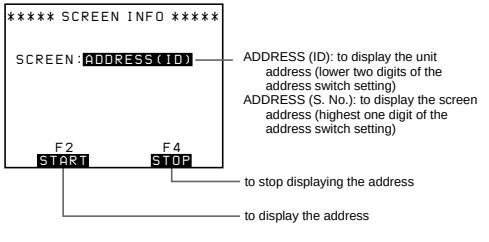
2 Press the ↓ or ↑ button to select OTHER CONTROL and press the ENTER button.
The OTHER CONTROL menu appears.



3 Press the ↓ or ↑ button to select SCREEN INFO and press the ENTER button.
The SCREEN INFO menu appears.



4 Press the ← or → button to select ADDRESS (ID) or ADDRESS (S. No.)


***** SCREEN INFO *****
SCREEN:ADDRESS(ID)
F2
START
F4
STOP
ADDRESS (ID): to display the unit address (lower two digits of the address switch setting)
ADDRESS (S. No.): to display the screen address (highest one digit of the address switch setting)
to stop displaying the address
to display the address

5 Press the F2 button.
The selected address is displayed on the screen.
Example of ADDRESS (ID): 01 (lower two digits of the address switch setting)
Example of ADDRESS (S. No.): S1 (highest one digit of the address switch setting with prefix S (screen)).

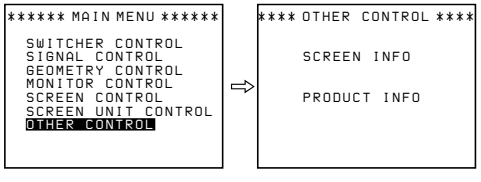
To stop displaying the address
Press the F4 button.

Displaying the Software Version of the JME-SA200

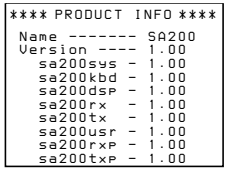
You can display the version of the software installed in this controller in the display window.

1 Establish communication with the ICU controller (page 21) and display the MAIN MENU.

2 Press the ↓ or ↑ button to select OTHER CONTROL and press the ENTER button.
The OTHER CONTROL menu appears.



3 Press the ↓ or ↑ button to select PRODUCT INFO and press ENTER button.
The information about the software version appears in the display window.



To stop displaying the information
Press the MENU button.

Troubleshooting

If you think you have a problem during operation, check through the following list.

Problem	Cause	Corrective action
The title display does not appear after the power has been turned on and four seconds or more have elapsed.	The battery pack is not attached to the unit.	Attach the battery pack.
	The battery is exhaused completely.	Charge the battery.
The MAIN MENU does not appear in the display window.	The unit is not connected to the ICU controller properly. (for wired control)	Check the connections.
	The digital data card is not inserted correctly. (for wireless control)	Insert the card fully into the slot.
	The cellular phone is not connected to the unit properly. (for wireless control)	Check the cellular phone connections.
The menu or the data on the display does not change even if the button is pressed. (for wireless control)	The phone number for the modem has not been registered.	Remove the cause of the problem, turn the power on and establish communcation again. Perform the adjustment from the stage in which you have pressed the ENTER button.
	The cellular phone is not connected to the unit properly.	
	The communication has interrupted.	
	The battery for the cellular phone is exhaused.	

Specifications

General

Power requirements
Lithium-ion battery
Power consumption
DC 7.2 V, 0.75 A
Dimensions 279 × 158 × 55.8 mm (w/h/d)
(11 × 6 1/4 × 2 1/4 inches)
not including the battery pack
Mass Approx. 1.3 kg (2 lb 14 oz)
not including the battery pack
Operating conditions
Temperature: 0°C to 40°C (32°F to 104°F)
Humidity: 30% to 70% (no condensation)
Signal cable length
1,000 m (3280 feet) max.

Input/output

CONTROL D-sub 15-pin for RS-422 (1)
PC CARD PCMCIA type II slot

Supplied accessories

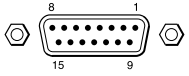
Dummy card (1) (inserted into the unit at the factory)
Shoulder strap (1)
Eject tool (1)
Operating Instructions (1)

Optional accessories

Rechargeable battery pack NP-F750
AC power adaptor AC-V615A (for charging the battery pack)

Pin assignment

CONTROL connector (D-sub 15-pin)

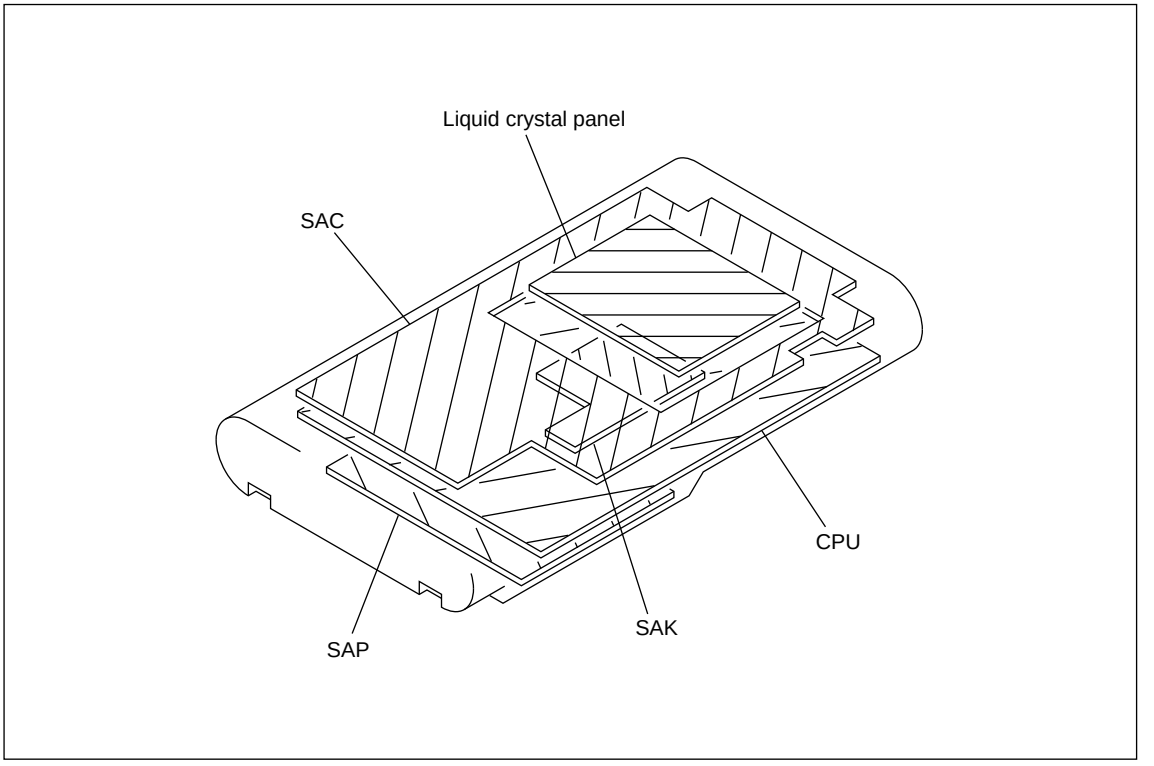


Pin No.	Signal	Pin No.	Signal
1	GND	9	TXD –
2	TXD +	10	RTS –
3	RTS +	11	RXD –
4	RXD +	12	CTS –
5	CTS +	13	DSR –
6	DSR +	14	DTR –
7	DTR +	15	Not used
8	GND		

Design and specifications are subject to change without notice.

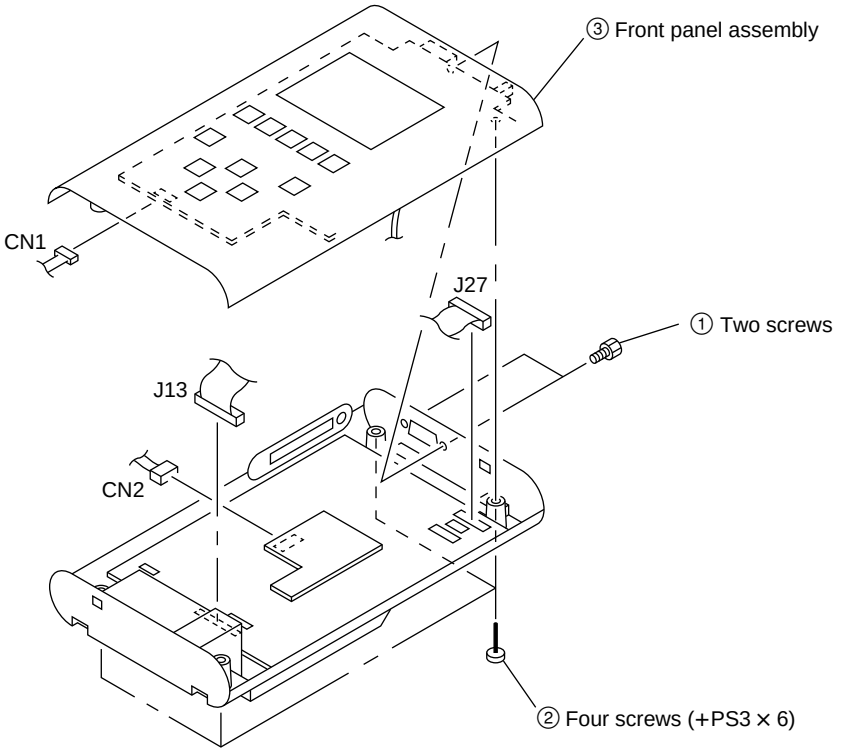
SECTION 2
SERVICE INFORMATIONS

2-1. CIRCUIT BOARDS LOCATION

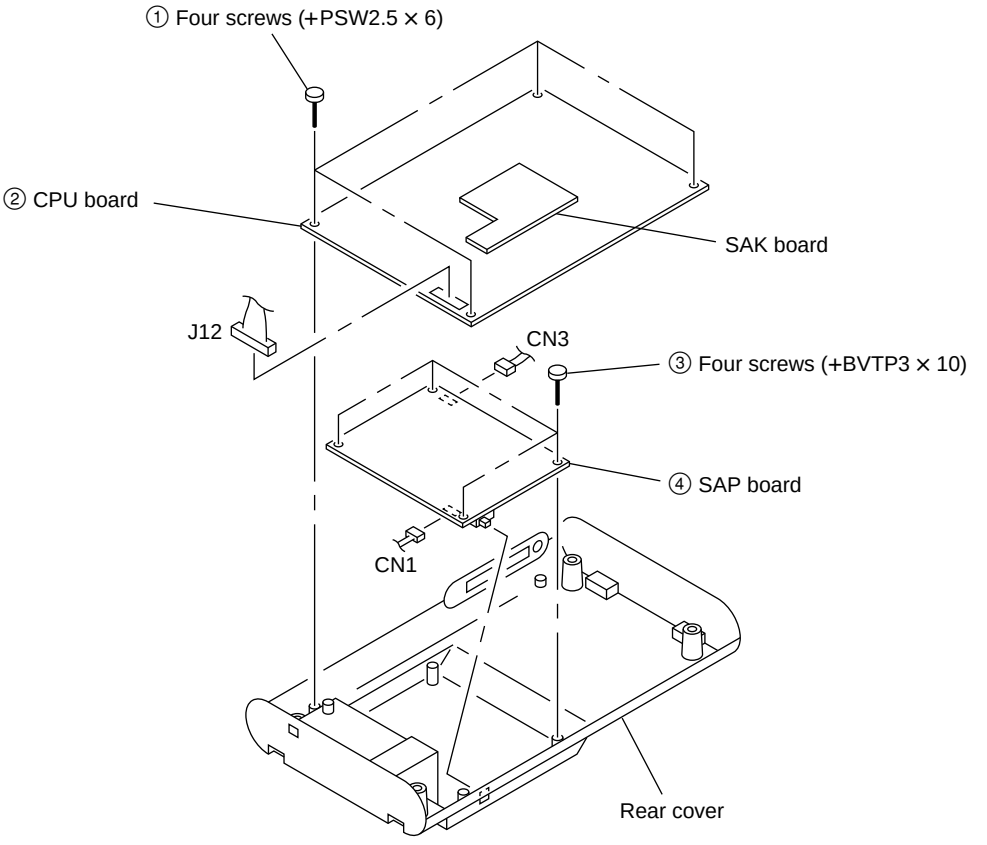


2-2. DISASSEMBLY

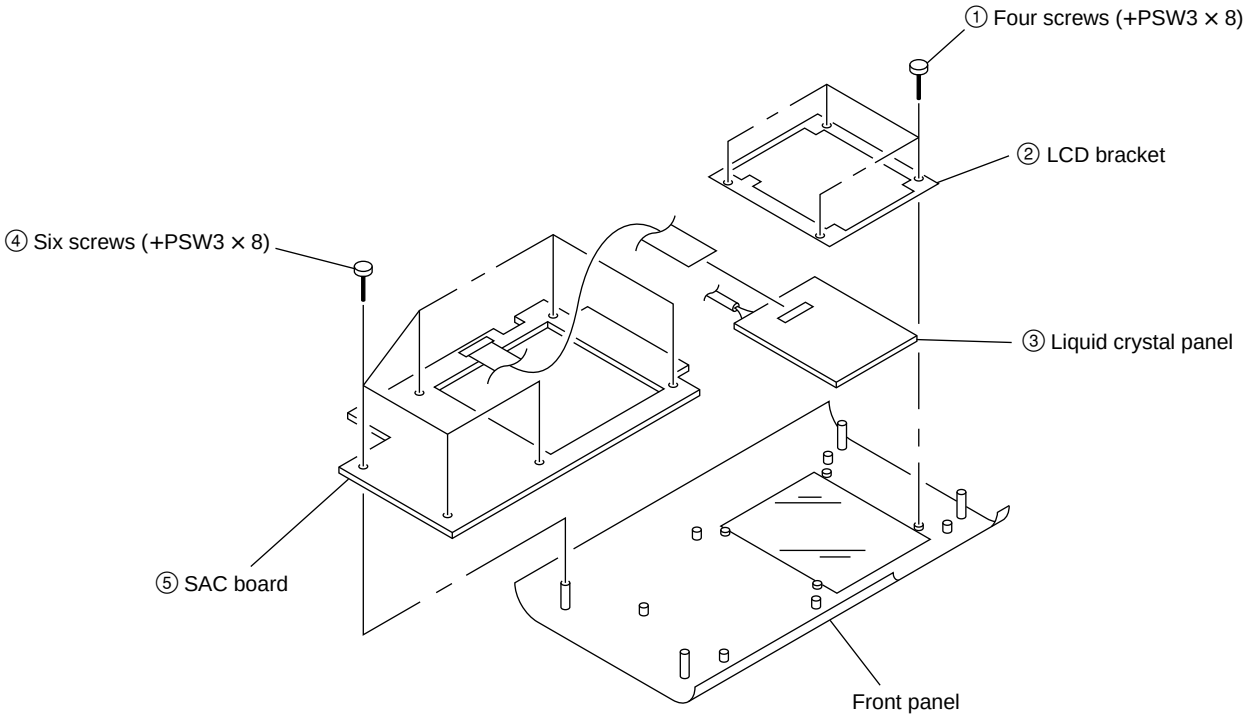
2-2-1. Front Panel Assembly Removal



2-2-2. CPU and SAP Boards Removal



2-2-3. Liquid Crystal Panel and SAC Board Removal



SECTION 3
CIRCUIT DESCRIPTIONS

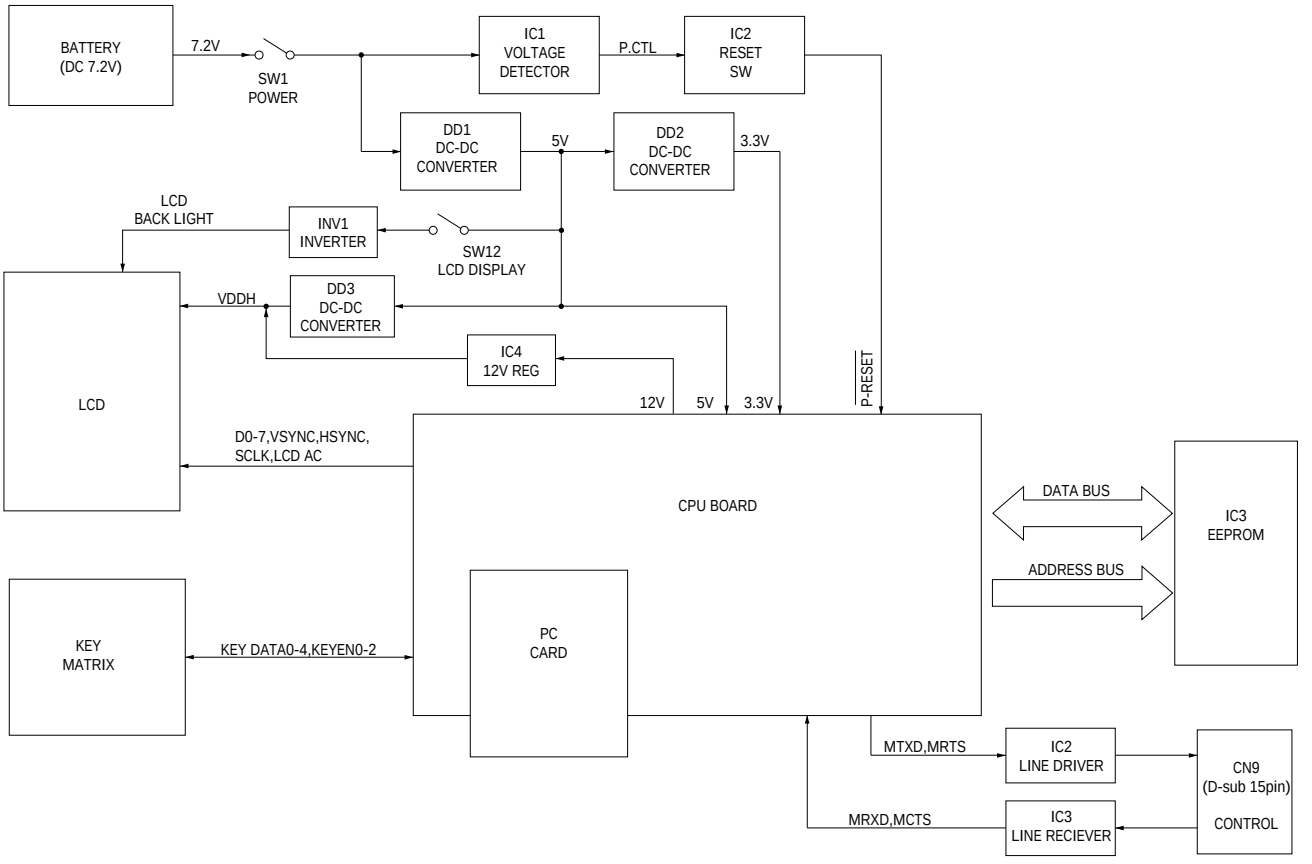


Fig. 1 Block Diagram

3-1. DESCRIPTION OF JME-SA200

The JME-SA200 has two systems of communication paths:
- Wireless
- Wired

Wireless communication:
Communication with other JumboTron peripheral equipment can be made by utilizing a portable telephone + data card via PC-Card Slot.
Wired communication:
Communication with other JumboTron peripheral equipment can be made with RS422 via a cable connected to the CONTROL terminal (CN9).

To provide these functions, the JME-SA200 consists of the following boards.

(1) CPU board
This board is a core unit of this set, and the CPU, program ROM, and PC-Card Slot are mounted.
- Controls the I/O card inserted in the PC-Card Slot.
- Makes a serial communication.
- Outputs LCD display signals.

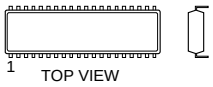
(2) SAC board
This board executes I/O processing.
- Mounts the matrix for operating the keys.
- Controls the start-up of LCD drive voltage.
- Converts serial I/F into RS422.

(3) SAP board
This board transforms the voltage input from battery into 3.3 V, 5 V, and 12 V, then outputs them.

(4) SAK board
This board repeats serial I/F signals between SAC board and CPU board.

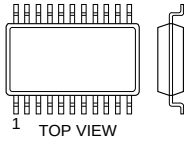
SECTION 4
SEMICONDUCTORS

DS26C31TM
DS26C32ATM



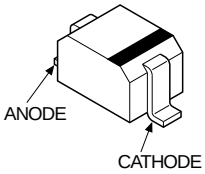
16pin DIP

SN74HC541ANS
SN74HC574ANS

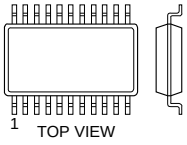


20pin SOP

1SS355
1SS355TE-17

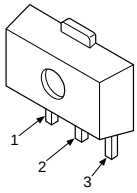


DS26C31TMX
DS26C32ATMX

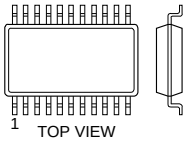


16pin SOP

TA78L12F

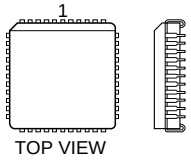


MB3761PF



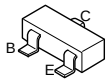
8pin SOP

X28HC256J-70

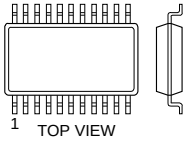


32pin QFJ

2SC1623-L5L6
2SC2412K-T-146-QR

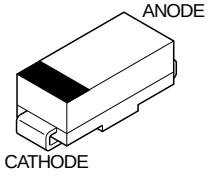


MC14001BF
MC14584BF
SN74HC02ANS
SN74HC02ANS-E20
SN74HC04ANS
SN74HC14ANS
SN74HC32ANS



14pin SOP

1SR154-400TE-25



SECTION 5
EXPLODED VIEWS

NOTE:

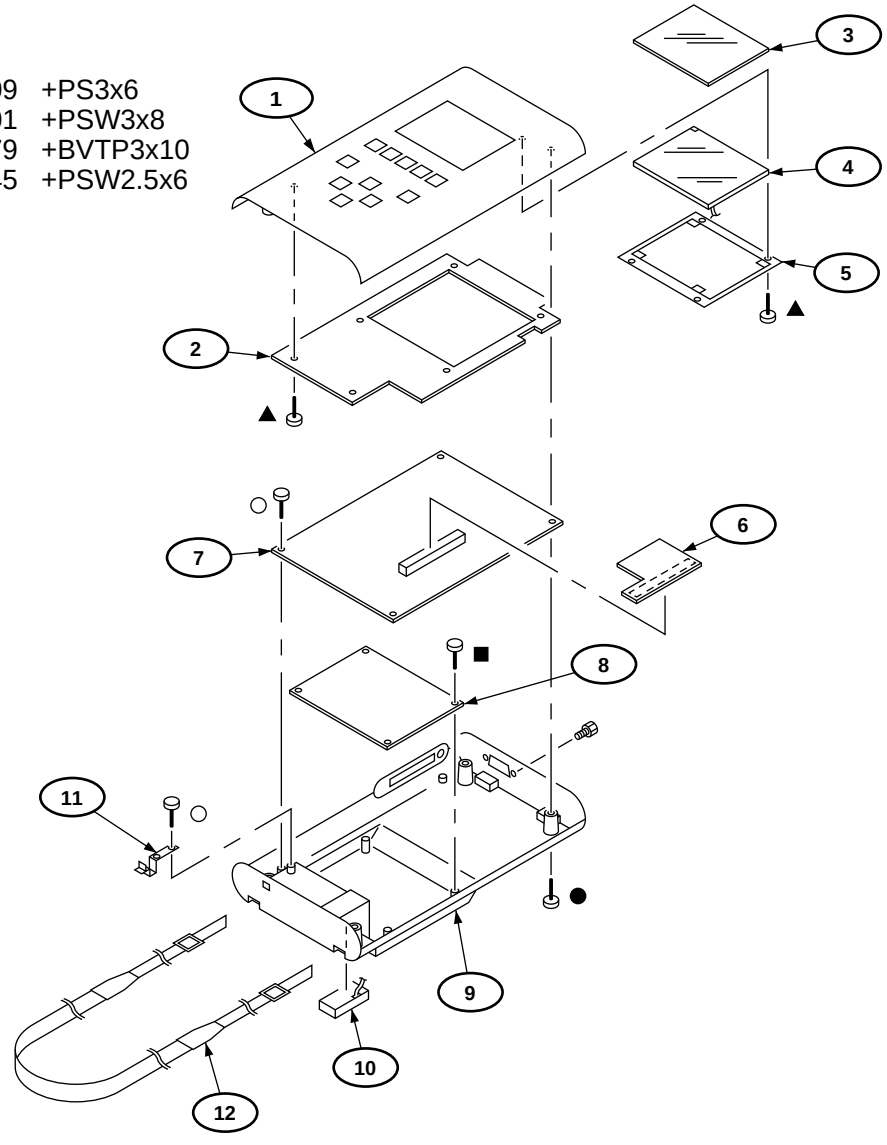
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

【使用上の注意】

- * 印の部品は常時在庫しておりません。
  受注して供給できるまで日数を要します。
- 分解図中の構成部品で，図面番号のない部品は供給しません。
- 組立部品の構成部品は備考欄に図面番号で示します。

5-1. CHASSIS

●: 7-682-647-09 +PS3x6
▲: 7-682-948-01 +PSW3x8
■: 7-685-647-79 +BVTP3x10
○: 7-621-763-45 +PSW2.5x6



Rf.No.	Part No.	Description	Remark	Rf.No.	Part No.	Description	Remark
1	* 4-065-471-01	PANEL, FRONT		7	* 1-761-111-11	BOARD, CPU MOUNT	
2	* A-1390-883-A	SAC BOARD, MOUNT		8	* A-1390-885-A	SAP BOARD, MOUNT	
3	* 4-065-472-01	WINDOW		9	* 4-065-470-01	COVER, REAR	
4	* 1-803-243-11	PANEL MODULE, LIQUID CRYSTAL I		10	1-694-076-21	TERMINAL BOARD, BATTERY	
5	* 4-065-473-01	BRACKET, LCD		11	* 4-066-062-01	PLATE, LOCK	
6	* A-1390-884-A	SAK BOARD, MOUNT		12	3-973-301-01	BELT (35), SHOULDER	

SAC

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified ⚠ marked are critical for safety.
Replace only with the part number specified.

Les composants identifiés par la marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

- CAPACITORS
  PF : μμ F
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

【使用上の注意】

⚠印の部品は，安全性を維持するために，重要な部品です。従って交換時は，必ず指定の部品を使用してください。

お願い
図面番号で部品を指定するときは，基板名又はブロックを併せて指定して下さい。

- 抵抗の単位Ωは省略してあります。
  酸金被膜：酸化金属被膜抵抗。
  金属被膜：金属被膜抵抗。
  参考欄のFは不燃性抵抗を示します。
- * 印の部品は常時在庫しておりません。
- ここに記載されている部品は，補修部品であるため，回路図及びセットについている部品と異なる場合があります。
- 基板どうしでリファレンスNo.が重複している場合がありますので発注の際には必ず基板名を明記して下さい。

Rf.NO.	PART NO.	DESCRIPTION			REMARK
	* A-1390-883-A	SAC BOARD MOUNT			
		**********			
		<CAPACITOR>			
C7	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C8	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C9	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C10	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C11	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C12	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C16	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C17	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C18	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C19	1-113-642-11	TANTAL. CHIP 47MF	20%	10V	
		<CONNECTOR>			
CN1	1-506-485-11	PIN, CONNECTOR 6P			
CN3	* 1-573-714-11	HEADER, CONNECTOR 10P			
CN4	* 1-750-784-11	HEADER, CONNECTOR 26P			
CN5	* 1-564-359-00	HEADER, CONNECTOR 20P			
CN7	1-770-025-21	CONNECTOR, FPC 20P			
CN9	1-569-712-11	CONNECTOR, D-SUB 15P			
		<DIODE>			
D18-719-988-62		DIODE	1SS355		
D28-719-988-62		DIODE	1SS355		
D38-719-988-62		DIODE	1SS355		

Rf.NO.	PART NO.	DESCRIPTION	REMARK
		<FERRITE BEAD>	
FB1	1-412-390-21	FERRITE 0UH	
FB2	1-412-390-21	FERRITE 0UH	
FB3	1-412-390-21	FERRITE 0UH	
FB4	1-412-390-21	FERRITE 0UH	
FB5	1-412-390-21	FERRITE 0UH	
FB6	1-412-390-21	FERRITE 0UH	
FB7	1-412-390-21	FERRITE 0UH	
FB8	1-412-390-21	FERRITE 0UH	
FB9	1-412-390-21	FERRITE 0UH	
FB10	1-412-390-21	FERRITE 0UH	
FB11	1-412-390-21	FERRITE 0UH	
FB12	1-412-390-21	FERRITE 0UH	
FB13	1-412-390-21	FERRITE 0UH	
FB14	1-412-390-21	FERRITE 0UH	
FB15	1-412-390-21	FERRITE 0UH	
FB16	1-412-390-21	FERRITE 0UH	
FB17	1-412-390-21	FERRITE 0UH	
FB18	1-412-390-21	FERRITE 0UH	
FB19	1-412-390-21	FERRITE 0UH	
FB20	1-412-390-21	FERRITE 0UH	
FB21	1-412-390-21	FERRITE 0UH	
FB22	1-412-390-21	FERRITE 0UH	
FB23	1-412-390-21	FERRITE 0UH	
FB24	1-412-390-21	FERRITE 0UH	
FB25	1-412-390-21	FERRITE 0UH	
FB26	1-412-390-21	FERRITE 0UH	
FB27	1-412-390-21	FERRITE 0UH	
FB28	1-412-390-21	FERRITE 0UH	
FB29	1-412-390-21	FERRITE 0UH	
FB30	1-412-390-21	FERRITE 0UH	

Rf.NO.	PART NO.	DESCRIPTION	REMARK
FB31	1-412-390-21	FERRITE 0UH	
FB32	1-412-390-21	FERRITE 0UH	
FB33	1-412-390-21	FERRITE 0UH	
FB34	1-412-390-21	FERRITE 0UH	
FB35	1-412-390-21	FERRITE 0UH	
FB36	1-412-390-21	FERRITE 0UH	
FB37	1-412-390-21	FERRITE 0UH	
FB38	1-412-390-21	FERRITE 0UH	
FB39	1-412-390-21	FERRITE 0UH	
FB40	1-412-390-21	FERRITE 0UH	
FB41	1-412-390-21	FERRITE 0UH	
FB42	1-412-390-21	FERRITE 0UH	
FB43	1-412-390-21	FERRITE 0UH	
FB44	1-412-390-21	FERRITE 0UH	
FB45	1-412-390-21	FERRITE 0UH	
FB46	1-412-390-21	FERRITE 0UH	
FB47	1-412-390-21	FERRITE 0UH	
FB48	1-412-390-21	FERRITE 0UH	
FB49	1-412-390-21	FERRITE 0UH	
FB50	1-412-390-21	FERRITE 0UH	
FB51	1-412-390-21	FERRITE 0UH	
FB52	1-412-390-21	FERRITE 0UH	
FB53	1-412-390-21	FERRITE 0UH	
FB54	1-412-390-21	FERRITE 0UH	
FB55	1-412-390-21	FERRITE 0UH	
FB56	1-412-390-21	FERRITE 0UH	
FB57	1-412-390-21	FERRITE 0UH	
FB58	1-412-390-21	FERRITE 0UH	
FB59	1-412-390-21	FERRITE 0UH	
FB60	1-412-390-21	FERRITE 0UH	
FB61	1-412-390-21	FERRITE 0UH	
FB62	1-412-390-21	FERRITE 0UH	
FB63	1-412-390-21	FERRITE 0UH	
		<FILTER>	
FL2	1-239-899-21	FILTER, CHIP EMI	
FL4	1-239-899-21	FILTER, CHIP EMI	
FL5	1-239-899-21	FILTER, CHIP EMI	
FL9	1-239-899-21	FILTER, CHIP EMI	
FL10	1-239-899-21	FILTER, CHIP EMI	
FL11	1-239-899-21	FILTER, CHIP EMI	
FL12	1-239-899-21	FILTER, CHIP EMI	
FL13	1-239-899-21	FILTER, CHIP EMI	
FL14	1-239-899-21	FILTER, CHIP EMI	
FL15	1-239-899-21	FILTER, CHIP EMI	
		<IC>	
IC1	8-759-926-21	IC SN74HC161ANS	
IC2	8-759-271-77	IC DS26C31TM	
IC3	8-759-271-78	IC DS26C32ATM	
IC4	8-759-926-77	IC SN74HC541ANS	
IC5	8-759-926-77	IC SN74HC541ANS	
IC6	8-759-926-77	IC SN74HC541ANS	
IC7	8-759-926-82	IC SN74HC574ANS	
IC8	8-759-925-80	IC SN74HC14ANS	
IC9	8-759-267-88	IC SN74HC02ANS-E20	

Rf.NO.	PART NO.	DESCRIPTION			REMARK
		<RESISTOR>			
R1	1-216-025-91	RES,CHIP	100	5%	1/10W
R2	1-216-025-91	RES,CHIP	100	5%	1/10W
R3	1-216-025-91	RES,CHIP	100	5%	1/10W
R4	1-216-073-00	RES,CHIP	10K	5%	1/10W
R5	1-216-073-00	RES,CHIP	10K	5%	1/10W
R6	1-216-073-00	RES,CHIP	10K	5%	1/10W
R7	1-216-073-00	RES,CHIP	10K	5%	1/10W
R8	1-216-073-00	RES,CHIP	10K	5%	1/10W
R9	1-216-073-00	RES,CHIP	10K	5%	1/10W
R10	1-216-097-91	RES,CHIP	100K	5%	1/10W
R11	1-216-097-91	RES,CHIP	100K	5%	1/10W
R12	1-216-097-91	RES,CHIP	100K	5%	1/10W
R13	1-216-097-91	RES,CHIP	100K	5%	1/10W
R14	1-216-097-91	RES,CHIP	100K	5%	1/10W
R15	1-216-097-91	RES,CHIP	100K	5%	1/10W
R16	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R17	1-809-363-21	THERMISTOR, NTC (2125)			
R18	1-216-691-11	METAL CHIP	47K	0.50%	1/10W
R19	1-216-687-11	METAL CHIP	33K	0.50%	1/10W
R20	1-216-667-11	METAL CHIP	4.7K	0.50%	1/10W
R28	1-216-081-00	RES,CHIP	22K	5%	1/10W
R29	1-216-081-00	RES,CHIP	22K	5%	1/10W
R30	1-216-081-00	RES,CHIP	22K	5%	1/10W
R31	1-216-081-00	RES,CHIP	22K	5%	1/10W
R32	1-216-081-00	RES,CHIP	22K	5%	1/10W
R33	1-216-081-00	RES,CHIP	22K	5%	1/10W
R34	1-216-081-00	RES,CHIP	22K	5%	1/10W
R35	1-216-081-00	RES,CHIP	22K	5%	1/10W
		<SWITCH>			
SW1	1-762-809-11	SWITCH, TACTILE (UP)			
SW2	1-762-809-11	SWITCH, TACTILE (LEFT)			
SW3	1-762-809-11	SWITCH, TACTILE (DOWN)			
SW4	1-762-809-11	SWITCH, TACTILE (RIGHT)			
SW5	1-762-809-11	SWITCH, TACTILE (MENU)			
SW6	1-762-809-11	SWITCH, TACTILE (ENTER)			
SW7	1-762-809-11	SWITCH, TACTILE (F1)			
SW8	1-762-809-11	SWITCH, TACTILE (F2)			
SW9	1-762-809-11	SWITCH, TACTILE (F3)			
SW10	1-762-809-11	SWITCH, TACTILE (F4)			
SW11	1-762-809-11	SWITCH, TACTILE (F5)			
SW12	1-570-898-11	SWITCH, SLIDE (LCD DISPLAY)			

****

* A-1390-884-A SAK BOARD, MOUNT

****

<CAPACITOR>

C1	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C2	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C3	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V

<CONNECTOR>

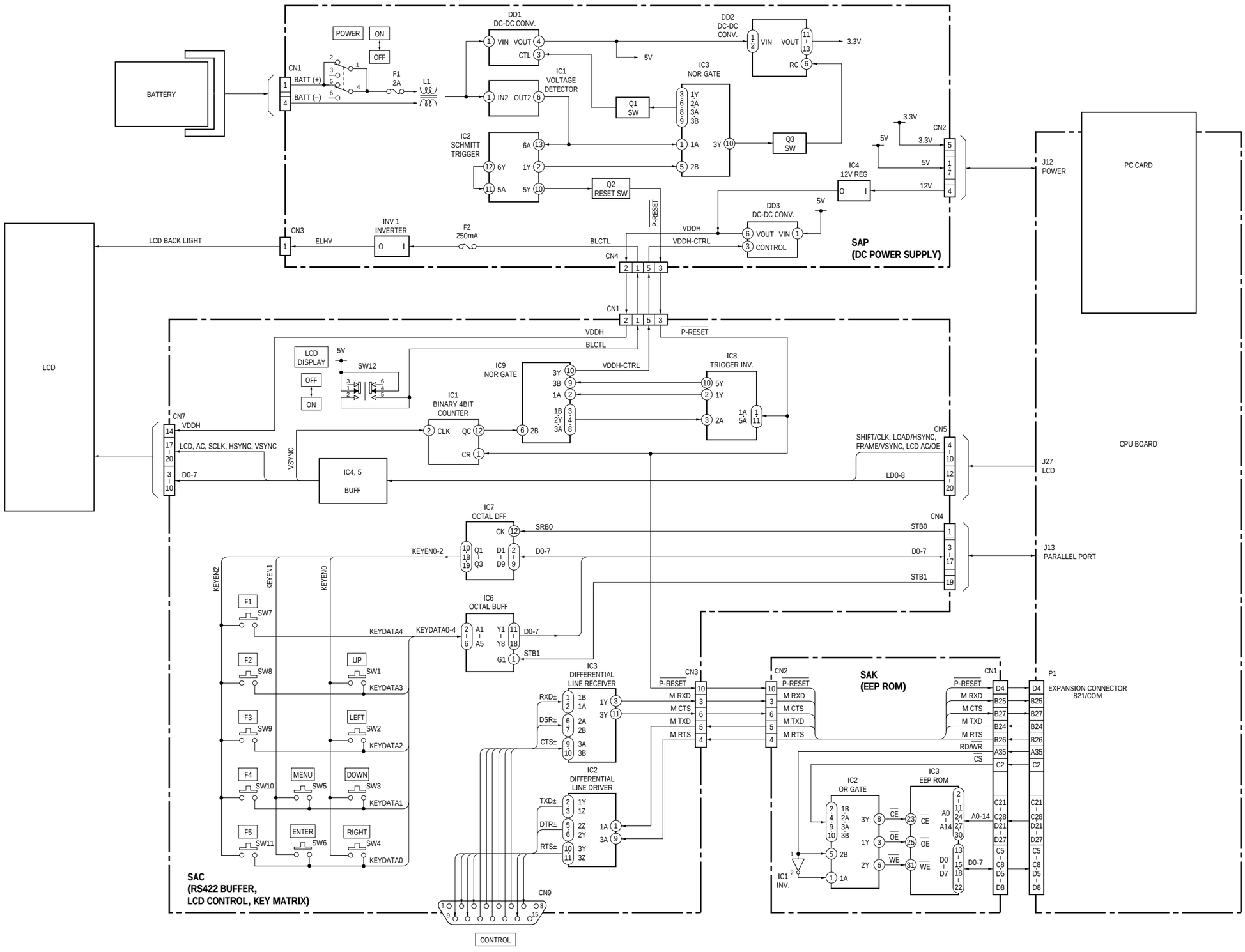
CN1	* 1-785-145-11	PIN, CONNECTOR (PC BOARD)	144P
CN2	* 1-573-714-11	HEADER, CONNECTOR	10P

Rf.NO.	PART NO.	DESCRIPTION				REMARK
		<IC>				
IC1	8-759-925-74	IC SN74HC04ANS				
IC2	8-759-925-85	IC SN74HC32ANS				
IC3	8-759-535-15	IC X28HC256J-70				
		<IC SOCKET>				
IS3	1-540-151-11	SOCKET, IC				
**********						
	* A-1390-885-A	SAP BOARD, MOUNT				
		**********				
		<CAPACITOR>				
C1	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	
C2	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C3	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C4	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C5	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C6	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C7	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C8	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C9	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C10	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C11	1-110-530-11	ELECT CHIP	1000MF	20%	6.3V	
C12	1-115-670-11	ELECT CHIP	220MF	20%	35V	
C13	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V	
C14	1-164-222-11	CERAMIC CHIP	0.22MF		25V	
C15	1-109-994-11	CERAMIC CHIP	2.2MF	10%	10V	
C16	1-126-399-11	ELECT CHIP	10MF	20%	35V	
C17	1-115-670-11	ELECT CHIP	220MF	20%	35V	
		<CONNECTOR>				
CN1	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P				
CN2	* 1-566-313-11	PIN, CONNECTOR 7P				
CN3	1-564-517-11	PLUG, CONNECTOR 2P				
CN4	1-506-485-11	PIN, CONNECTOR 6P				
		<DIODE>				
D1	8-719-053-18	DIODE 1SR154-400TE-25				
D2	8-719-053-18	DIODE 1SR154-400TE-25				
D3	8-719-053-18	DIODE 1SR154-400TE-25				
		<DC-DC CONVERTER>				
DD1	1-475-892-11	CONVERTER UNIT, DC-DC				
DD2	1-475-271-11	CONVERTER UNIT, DC-DC				
DD3	1-475-891-11	CONVERTER UNIT, DC-DC				
		<FUSE>				
F1	⚠1-532-779-51	FUSE, MICRO (SECONDARY) (2A/125V)				
F2	⚠1-532-770-51	FUSE, MICRO (250mA/125V)				
		<FERRITE BEAD>				
FB1	1-412-390-21	FERRITE	0UH			
FB2	1-412-390-21	FERRITE	0UH			

Rf.NO.	PART NO.	DESCRIPTION				REMARK
		<FILTER>				
FL1	1-239-899-21	FILTER, CHIP EMI				
FL2	1-239-899-21	FILTER, CHIP EMI				
FL3	1-239-899-21	FILTER, CHIP EMI				
FL4	1-239-899-21	FILTER, CHIP EMI				
FL5	1-239-899-21	FILTER, CHIP EMI				
FL6	1-239-899-21	FILTER, CHIP EMI				
FL7	1-239-899-21	FILTER, CHIP EMI				
FL8	1-239-899-21	FILTER, CHIP EMI				
FL9	1-239-899-21	FILTER, CHIP EMI				
FL10	1-239-899-21	FILTER, CHIP EMI				
FL11	1-239-899-21	FILTER, CHIP EMI				
FL12	1-239-899-21	FILTER, CHIP EMI				
FL14	1-239-899-21	FILTER, CHIP EMI				
		<IC>				
IC1	8-759-927-99	IC MB3761PF				
IC2	8-759-009-67	IC MC14584BF				
IC3	8-759-008-74	IC MC14001BF				
IC4	8-759-169-45	IC TA78L12F				
		<INVERTER>				
INV1	1-475-893-11	INVERTER UNIT				
		<COIL>				
L1	1-239-581-21	FILTER, EMI				
		<TRANSISTOR>				
Q1	8-729-120-28	TRANSISTOR 2SC1623-L5L6				
Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6				
Q3	8-729-120-28	TRANSISTOR 2SC1623-L5L6				
		<RESISTOR>				
R1	1-216-101-00	RES,CHIP	150K	5%	1/10W	
R2	1-216-689-11	RES,CHIP	39K	5%	1/10W	
R3	1-216-059-00	RES,CHIP	2.7K	5%	1/10W	
R4	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R5	1-216-693-11	METAL CHIP	56K	0.50%	1/10W	
R6	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R7	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R8	1-216-121-91	RES,CHIP	1M	5%	1/10W	
R9	1-216-105-91	RES,CHIP	220K	5%	1/10W	
R10	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R11	1-216-097-91	RES,CHIP	100K	5%	1/10W	
R12	1-216-073-00	RES,CHIP	10K	5%	1/10W	
R13	1-216-061-00	RES,CHIP	3.3K	5%	1/10W	
		<SWITCH>				
SW1	1-771-467-11	SWITCH, SLIDE (POWER)				
**********						

Rf.NO.	PART NO.	DESCRIPTION	REMARK
		MISCELLANEOUS	
		**********	
	1-694-076-21	TERMINAL BOARD, BATTERY	
*	1-761-111-11	BOARD, CPU MOUNT	
*	1-803-243-11	PANEL MODULE, LIQUID CRYSTAL I	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	3-864-808-01	MANUAL, INSTRUCTION (JAPANESE)	
	3-864-808-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-864-808-21	MANUAL, INSTRUCTION (GERMAN)	
	3-864-808-31	MANUAL, INSTRUCTION (FRENCH)	
	3-864-808-41	MANUAL, INSTRUCTION (SPANISH)	
	3-864-808-51	MANUAL, INSTRUCTION (ITALIAN)	

SECTION 7
BLOCK DIAGRAM



SECTION 8
DIAGRAMS

8-1. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics.
- All electrolytics are in 50 V unless otherwise specified.
- All resistors are in ohms, 1/4 W in resistance, 1/10W in chip resistance.
  kΩ = 1000 Ω, MΩ = 1000k Ω
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

Reference information

RESISTOR	RN	: METAL FILM
	RC	: SOLID
	FPRD	: NONFRAMMABLE CARBON
	FUSE	: NONFLAMMABLE FUSIBLE
	RS	: NONFLAMMABLE METAL OXIDE
	RB	: NONFLAMMABLE CEMENT
	RW	: NONFLAMMABLE WIREWOUND
	※	: ADJUSTMENT RESISTOR
COIL	LF-8L	: MICRO INDUCTOR
CAPACITOR	TA	: TANTALUM
	PS	: STYROL
	PP	: POLYPROPYLENE
	PT	: MYLAR
	MPS	: METALIZED POLYESTER
	MPP	: METALIZED POLYPROPYLENE
	ALB	: BIPOLAR
	ALT	: HIGH TEMPERATURE
	ALR	: HIGH RIPPLE

The components identified ⚠ marked are critical for safety.
Replace only with the part number specified.

Les composants identifiés par la marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

- ケミタン，タンタルを除くコンデンサで耐圧50 V以下のものは，その耐圧を省略。単位はすべてμF（pはpF）
- ケミコン，タンタルのコンデンサで耐圧50Vは省略。
- 抵抗で指示のないものは1/4 W，チップ抵抗は1/10 Wです。
  単位は全てΩ。k Ω = 1000 Ω，M Ω = 1000 kΩ
- 印はヒューズ抵抗。
- 印は不燃性抵抗。
- △ 印は内蔵部品。
- 印はパネル表示および調整名称。
- 半固定抵抗および可変抵抗器の特性カーブ（B）は省略。

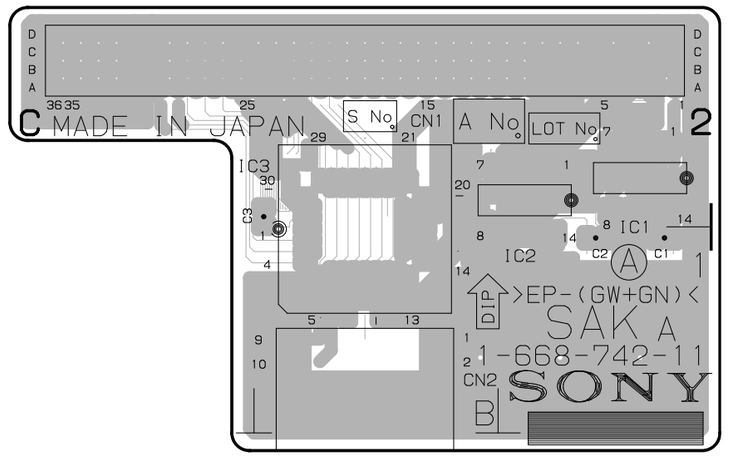
－部品特性省略表－

- 固定抵抗
  RN ：金属被膜
  RC ：ソリッド
  FPRD ：不燃性カーボン
  FUSE ：不燃性ヒューズ
  RS ：不燃性酸化金属被膜
  RB ：不燃性セメント
  RW ：不燃性巻線
  ※ ：調整抵抗

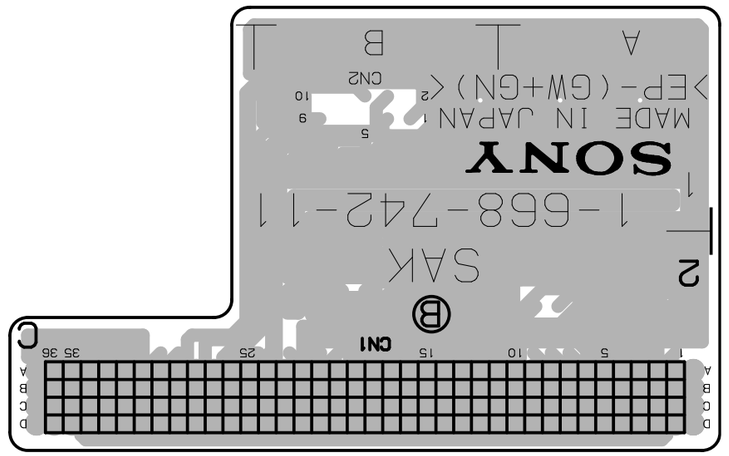
- マイクロインダクタ
  LF−8B ：マイクロインダクタ

- コンデンサ
  TA ：タンタル
  PS ：スチロール
  PP ：ポリプロピレン
  PT ：マイラ
  MPS ：メタライズドポリエステル
  MPP ：メタライズドポリプロピレン
  ALB ：バイポーラ
  ALT ：高温用
  ALR ：ハイリップル

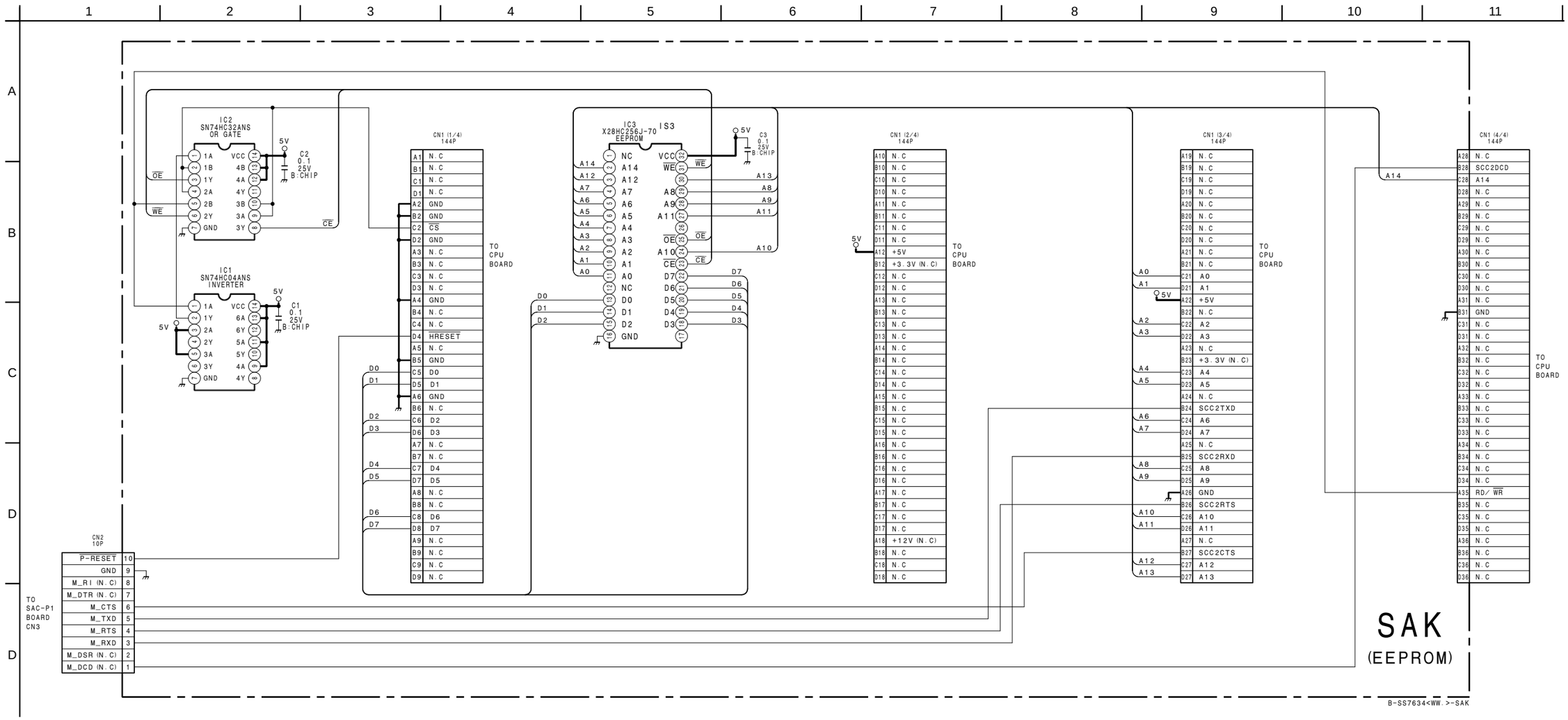
⚠印の部品は，安全性を維持するために，重要な部品です。従って交換時は，必ず指定の部品を使用してください。

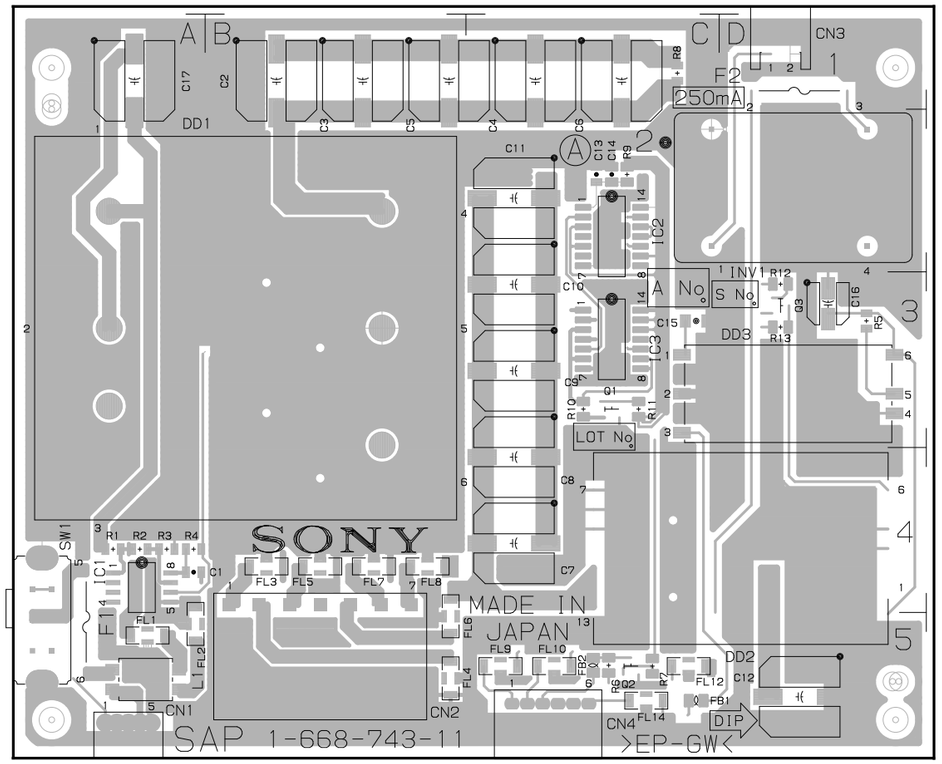


SAK – A SIDE –
SUFFIX: -11

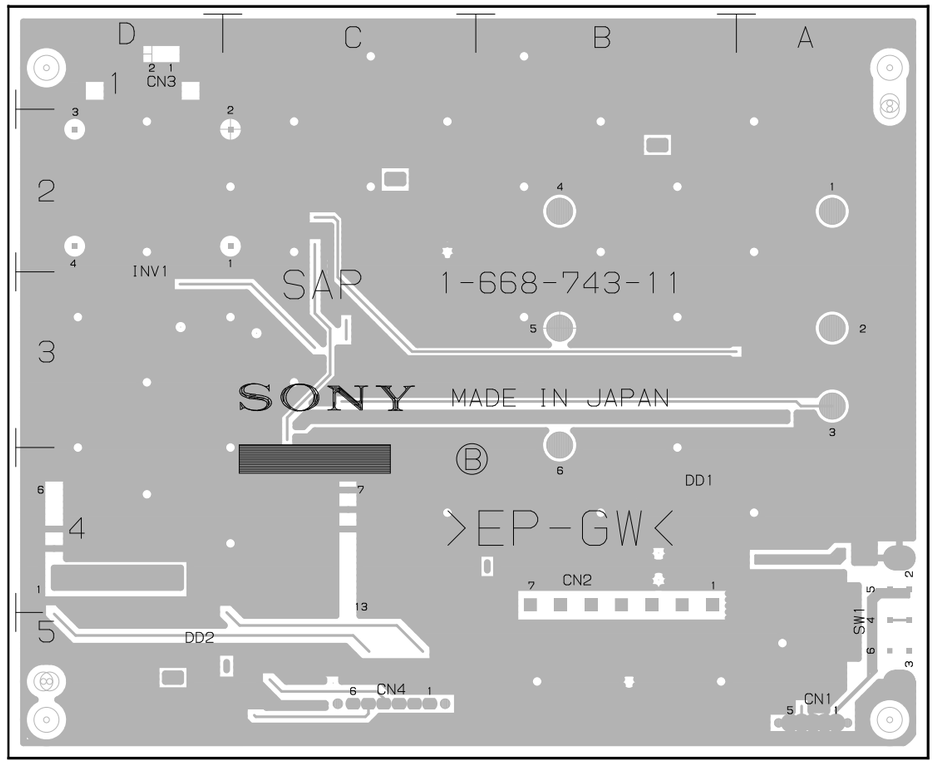


SAK – B SIDE –
SUFFIX: -11

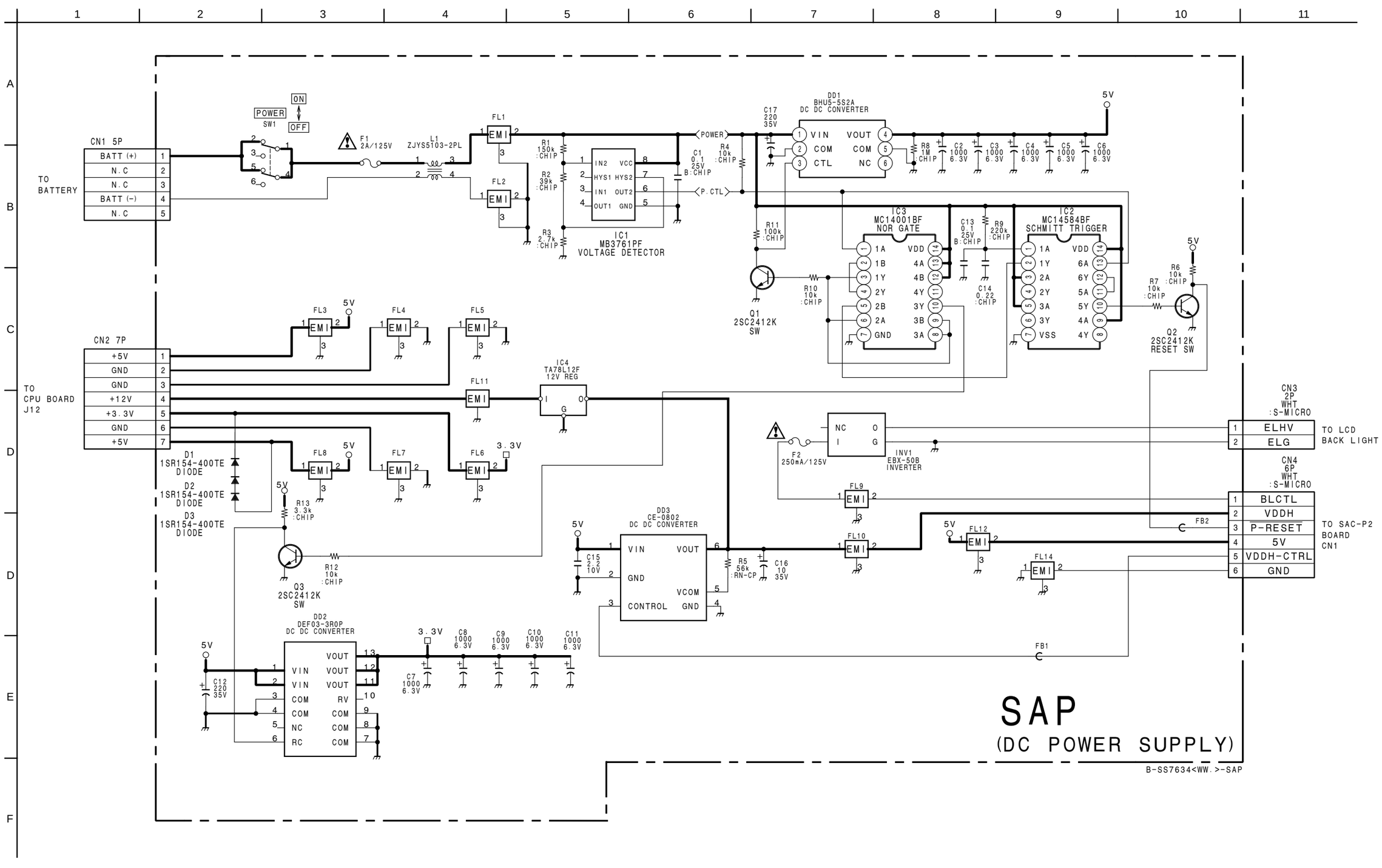

IC2
SN74HC32ANS
OR GATE
IC1
SN74HC04ANS
INVERTER
IC3
X28HC256J-70
EEPROM
IS3
C1 0.1 25V B.CHIP
C2 0.1 25V B.CHIP
C3 0.1 25V B.CHIP
5V
CN1 (1/4) 144P
CN1 (2/4) 144P
CN1 (3/4) 144P
CN1 (4/4) 144P
TO CPU BOARD
CN2 10P
P-RESET 10
GND 9
M_RI (N.C) 8
M_DTR (N.C) 7
M_CTS 6
M_TXD 5
M_RTS 4
M_RXD 3
M_DSR (N.C) 2
M_DCD (N.C) 1
TO SAC-P1 BOARD CN3
SAK
(EEPROM)
B-SS7634<WW.>-SAK

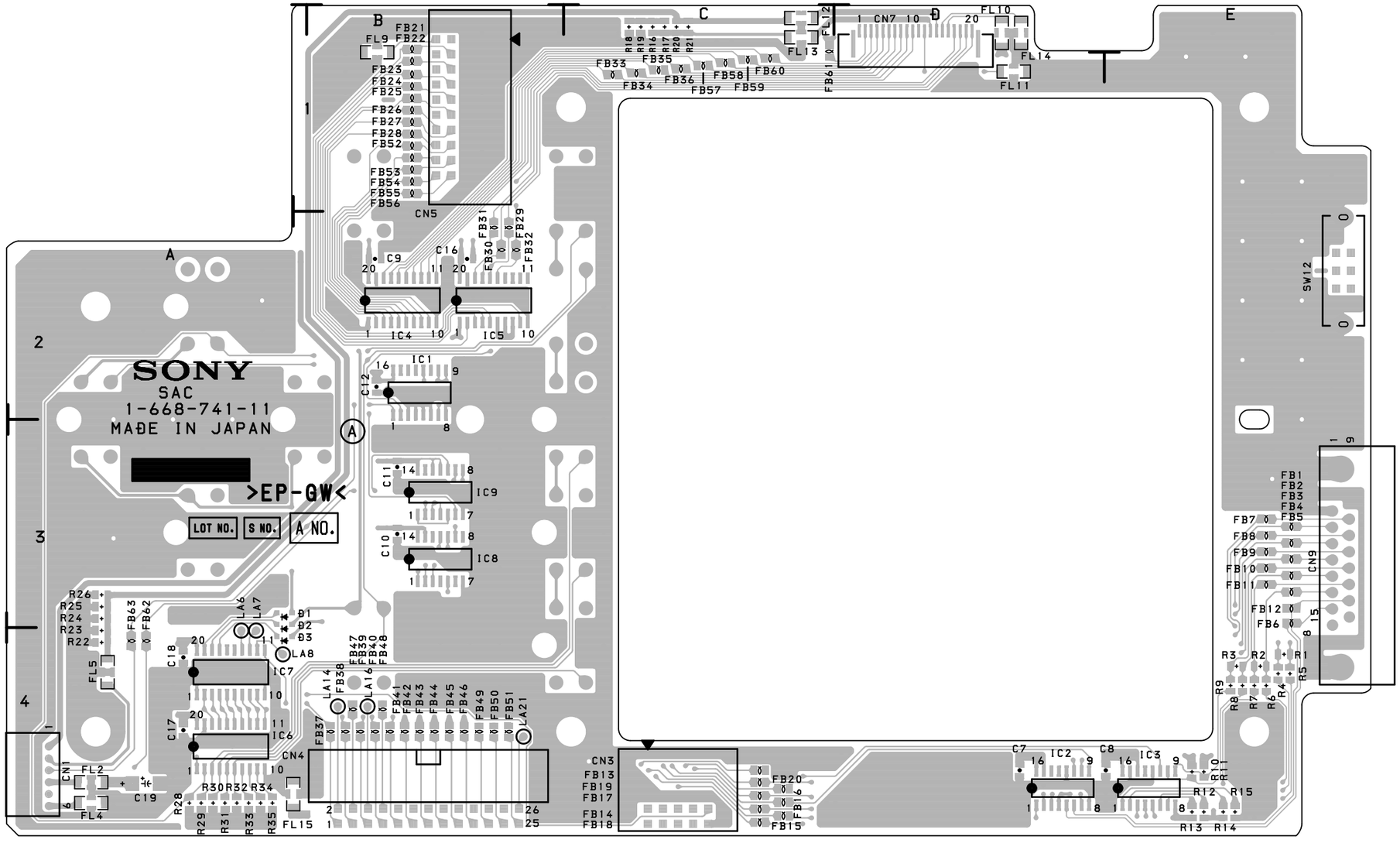


SAP – A SIDE –
SUFFIX: -11



SAP – B SIDE –
SUFFIX: -11

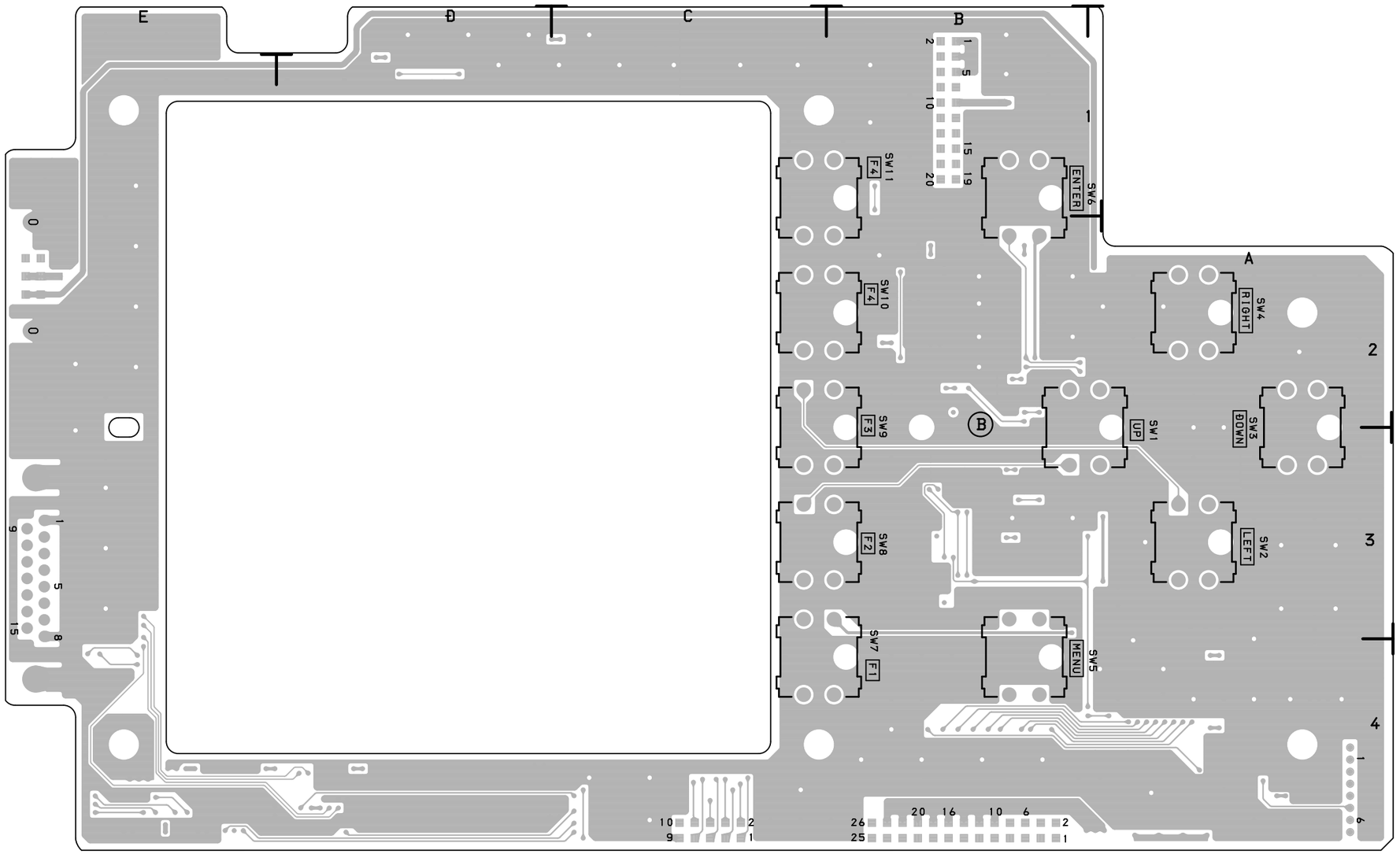

CN1 5P
BATT (+) 1
N.C 2
N.C 3
BATT (−) 4
N.C 5
TO BATTERY
POWER SW1 ON OFF
F1 2A/125V
L1 ZJYS5103-2PL
FL1 FL2
R1 150k :CHIP
R2 39k :CHIP
R3 2.7k :CHIP
IC1 MB3761PF VOLTAGE DETECTOR
C1 0.1 25V B.CHIP
POWER
P.CTL
C17 220 35V
DD1 BHU5-5S2A DC DC CONVERTER
VIN COM CTL VOUT COM NC
5V
R8 1M :CHIP
C2 1000 6.3V
C3 1000 6.3V
C4 1000 6.3V
C5 1000 6.3V
C6 1000 6.3V
R4 10k :CHIP
R11 100k :CHIP
R10 10k :CHIP
Q1 2SC2412K SW
IC3 MC14001BF NOR GATE
IC2 MC14584BF SCHMITT TRIGGER
C13 0.1 25V B.CHIP
R9 220k :CHIP
C14 0.22 :CHIP
R6 10k :CHIP
R7 10k :CHIP
Q2 2SC2412K RESET SW
FL3 FL4 FL5
CN2 7P
+5V 1
GND 2
GND 3
+12V 4
+3.3V 5
GND 6
+5V 7
TO CPU BOARD J12
FL11
IC4 TA78L12F 12V REG
D1 1SR154-400TE DIODE
D2 1SR154-400TE DIODE
D3 1SR154-400TE DIODE
FL8 FL7 FL6
3.3V
R13 3.3k :CHIP
R12 10k :CHIP
Q3 2SC2412K SW
DD2 DEF03-3R0P DC DC CONVERTER
VIN VIN COM COM NC RC VOUT VOUT VOUT RV COM COM COM
C12 220 35V
C7 1000 6.3V
C8 1000 6.3V
C9 1000 6.3V
C10 1000 6.3V
C11 1000 6.3V
DD3 CE-0802 DC DC CONVERTER
VIN GND CONTROL VOUT VCOM GND
C15 2.2 10V
R5 56k :RN-CP
C16 10 35V
F2 250mA/125V
INV1 EBX-50B INVERTER
NC I O G
FL9 FL10 FL12 FL14
FB2
FB1
CN3 2P WHT :S-MICRO
ELHV
ELG
TO LCD BACK LIGHT
CN4 6P WHT :S-MICRO
BLCTL
VDDH
P-RESET
5V
VDDH-CTRL
GND
TO SAC-P2 BOARD CN1
SAP
(DC POWER SUPPLY)
B-SS7634<WW.>-SAP



SAC BOARD

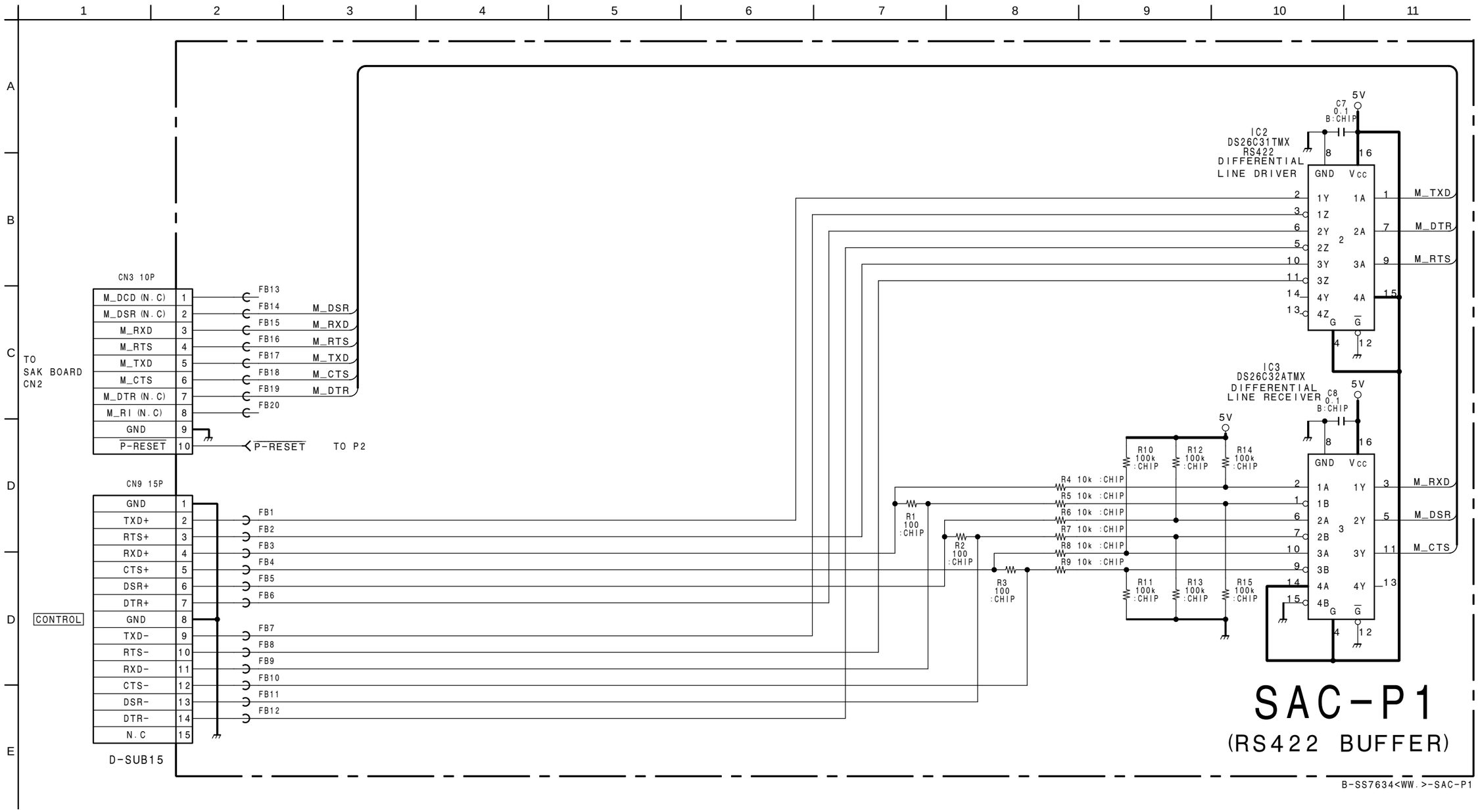
D1	A-3
D2	A-4
D3	A-4
IC1	B-2
IC2	D-4
IC3	E-4
IC4	B-2
IC5	B-2
IC6	A-4
IC7	A-4
IC8	B-3
IC9	B-3

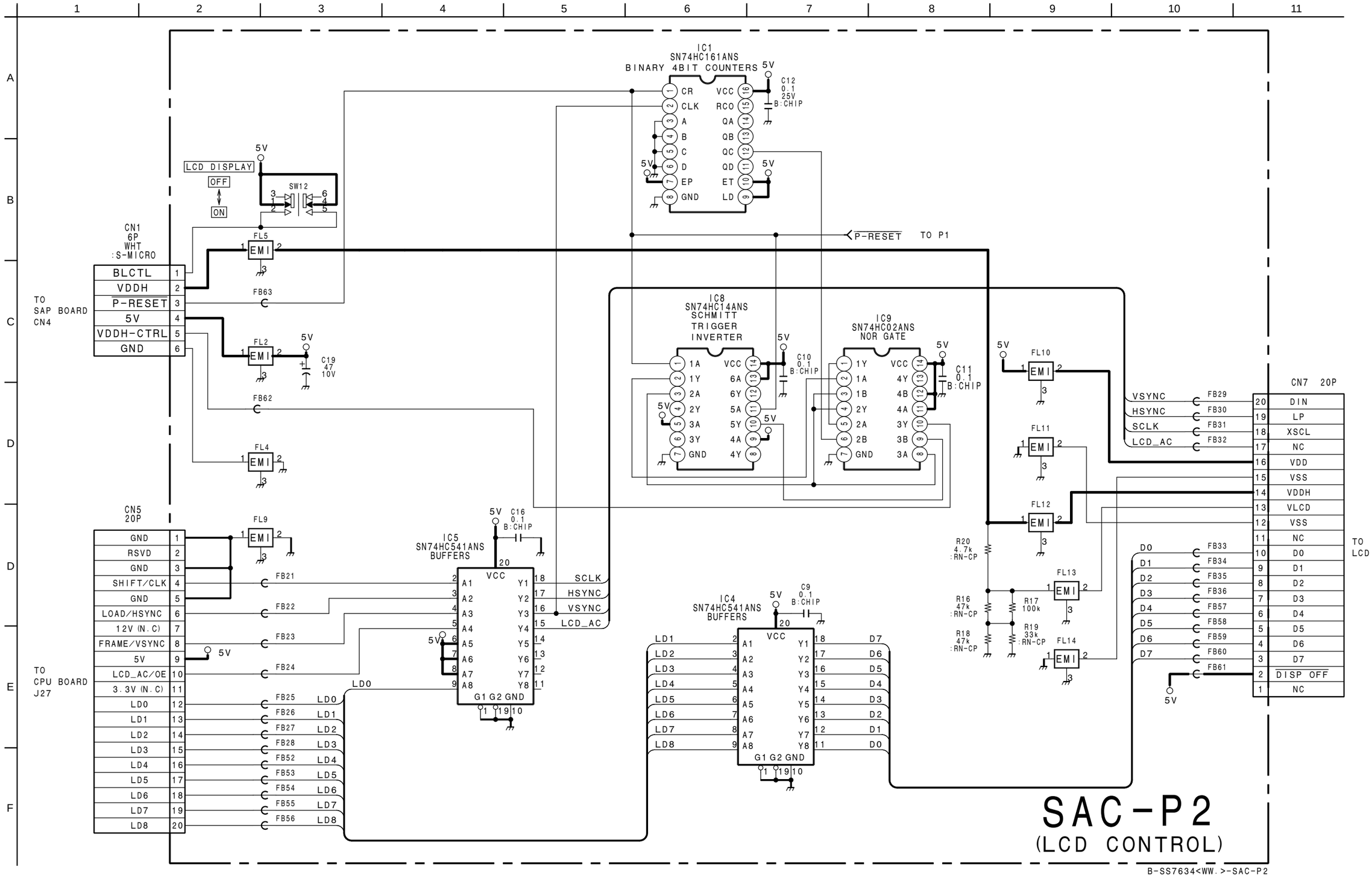
SAC – A SIDE –
SUFFIX: -11

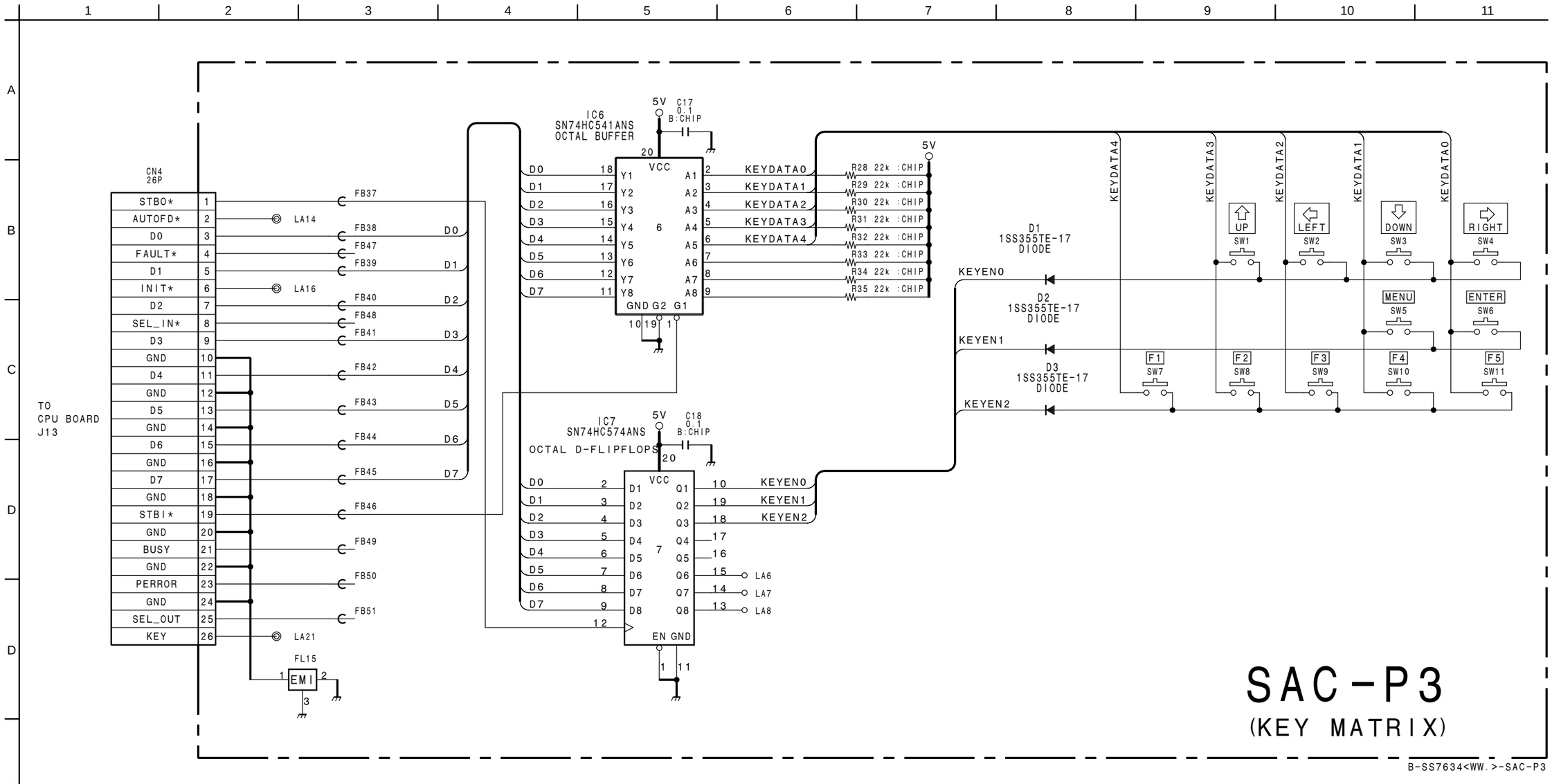


SAC – B SIDE –

SUFFIX: -11


CN3 10P
M_DCD (N.C) 1
M_DSR (N.C) 2
M_RXD 3
M_RTS 4
M_TXD 5
M_CTS 6
M_DTR (N.C) 7
M_RI (N.C) 8
GND 9
P-RESET 10
FB13
FB14 M_DSR
FB15 M_RXD
FB16 M_RTS
FB17 M_TXD
FB18 M_CTS
FB19 M_DTR
FB20
P-RESET
TO P2
TO SAK BOARD CN2
CN9 15P
GND 1
TXD+ 2
RTS+ 3
RXD+ 4
CTS+ 5
DSR+ 6
DTR+ 7
GND 8
TXD- 9
RTS- 10
RXD- 11
CTS- 12
DSR- 13
DTR- 14
N.C 15
FB1
FB2
FB3
FB4
FB5
FB6
FB7
FB8
FB9
FB10
FB11
FB12
CONTROL
D-SUB15
5V
C7 0.1 B:CHIP
IC2 DS26C31TMX RS422 DIFFERENTIAL LINE DRIVER
GND VCC
1Y 1A
1Z
2Y 2A
2Z
3Y 3A
3Z
4Y 4A
4Z G G
M_TXD
M_DTR
M_RTS
IC3 DS26C32ATMX DIFFERENTIAL LINE RECEIVER
C8 0.1 B:CHIP
R10 100k :CHIP
R12 100k :CHIP
R14 100k :CHIP
R4 10k :CHIP
R5 10k :CHIP
R6 10k :CHIP
R7 10k :CHIP
R8 10k :CHIP
R9 10k :CHIP
R1 100 :CHIP
R2 100 :CHIP
R3 100 :CHIP
R11 100k :CHIP
R13 100k :CHIP
R15 100k :CHIP
GND VCC
1A 1Y
1B
2A 2Y
2B
3A 3Y
3B
4A 4Y
4B G G
M_RXD
M_DSR
M_CTS
SAC-P1
(RS422 BUFFER)
B-SS7634<WW.>-SAC-P1


IC1
SN74HC161ANS
BINARY 4BIT COUNTERS
CR
CLK
A
B
C
D
EP
GND
VCC
RCO
QA
QB
QC
QD
ET
LD
C12
0.1
25V
B:CHIP
LCD DISPLAY
OFF
ON
SW12
CN1
6P
WHT
:S-MICRO
BLCTL
VDDH
P-RESET
5V
VDDH-CTRL
GND
TO
SAP BOARD
CN4
FL5
FL2
FL4
FB63
FB62
C19
47
10V
P-RESET
TO P1
IC8
SN74HC14ANS
SCHMITT
TRIGGER
INVERTER
C10
0.1
B:CHIP
IC9
SN74HC02ANS
NOR GATE
C11
0.1
B:CHIP
FL10
FL11
FL12
FL13
FL14
VSYNC
HSYNC
SCLK
LCD_AC
FB29
FB30
FB31
FB32
CN7 20P
20 DIN
19 LP
18 XSCL
17 NC
16 VDD
15 VSS
14 VDDH
13 VLCD
12 VSS
11 NC
10 D0
9 D1
8 D2
7 D3
6 D4
5 D5
4 D6
3 D7
2 DISP OFF
1 NC
TO
LCD
R20
4.7k
:RN-CP
R16
47k
:RN-CP
R17
100k
R18
47k
:RN-CP
R19
33k
:RN-CP
D0
D1
D2
D3
D4
D5
D6
D7
FB33
FB34
FB35
FB36
FB57
FB58
FB59
FB60
FB61
CN5
20P
GND
RSVD
GND
SHIFT/CLK
GND
LOAD/HSYNC
12V (N.C)
FRAME/VSYNC
5V
LCD_AC/OE
3.3V (N.C)
LD0
LD1
LD2
LD3
LD4
LD5
LD6
LD7
LD8
TO
CPU BOARD
J27
FL9
FB21
FB22
FB23
FB24
FB25
FB26
FB27
FB28
FB52
FB53
FB54
FB55
FB56
IC5
SN74HC541ANS
BUFFERS
C16
0.1
B:CHIP
SCLK
HSYNC
VSYNC
LCD_AC
IC4
SN74HC541ANS
BUFFERS
C9
0.1
B:CHIP
SAC-P2
(LCD CONTROL)
B-SS7634<WW.>-SAC-P2



SAC-P3
(KEY MATRIX)

B-SS7634<WW.>-SAC-P3

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